

The Technology Review

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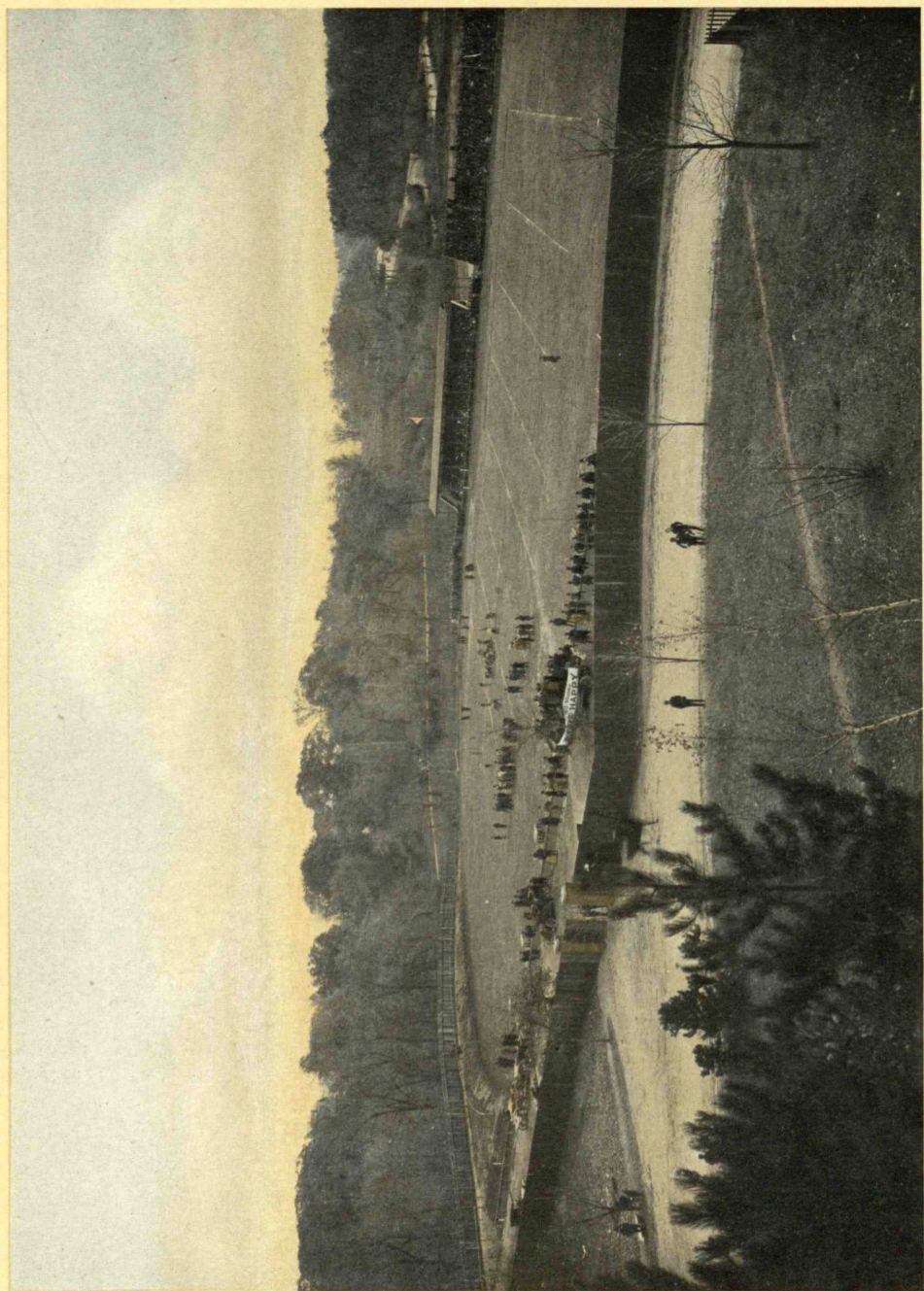
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TECHNOLOGY FIELD, NEAR JAMAICA POND, BROOKLINE

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PHASES OF ARCHITECTURAL EDUCATION

The necessity of a well rounded, consistent school training for the Architect—The place filled by the Department of Architecture of the Institute.

A boy has aspirations to become an architect. He is in a preparatory school or in an office. If he is in the former, he can use books. He knows something about mathematics and history, modern languages and drawing,—mechanical or freehand,—and perhaps a little about art. He knows nothing about the practical side of architecture or what it means. The boy in the office has, in many cases, had the preparatory school training, but has forgotten almost all that he learned, and has lost the knack of studying. He does know something about the practical side of architecture, nevertheless. Neither knows how to start. Neither knows how to get down to the fundamentals, or, once there, how to develop the subject consistently and logically so as to obtain a well-rounded education.

They do soon learn that there are two important phases to architecture, the æsthetic and the practical. These appear to them to be diametrically opposed, as though they would have to be studied separately. The office man has had a little of the practical: neither has had much of the æsthetic. Neither has developed that power to reason broadly and soundly that is so essential to the accomplishment of vital architecture. The problem before them is how to start.

The preparatory school man usually goes directly to one of the regular architectural schools, of which more later. The office man has neither the funds nor the desire to do this, but he does realize

that he needs something besides what he is getting in the office. He hears, through friends, of the ateliers conducted by the Beaux-Arts Society or by the local architectural club. The work that is done there is very different from what he is doing in the office. It seems to him to be the one thing necessary to fill out his architectural training. The comradeship and the emulation appeal to him. He takes up the work.

Now the atelier system of the Beaux-Arts Society is excellent as far as it goes. It does give men a chance to "loosen up," to cultivate their imagination in a way that they could never do in the office. In its fellowship and rivalry it generates an *esprit de corps* that brings out the best in a man, and makes him work. This develops. In the communities away from the architectural schools this is the best thing a man could do, and in any case it is most worth while for a time. However, it does not give a man much idea of the constructional side or of the interdependence of the constructional and the æsthetic. He does not get down to fundamentals, with the result that he is always working in the air, so to speak; nor is there anything about the atelier which would particularly develop his reasoning powers. How much good a man may get from an atelier depends largely on his patron. If the latter is a broad man, with a thorough, well-rounded education, if he is enthusiastic and gives a lot of time and energy to the atelier, the student will get much profit from it, but otherwise he will not; and we know how often the busy architect becomes absorbed in his own office work, and has to neglect his atelier, and, again, how hard it is to get the best men to take an atelier. At best the training of the atelier is incomplete.

A well-rounded education means continuous, uninterrupted, zealous work, and this for a number of years along lines which experience has proved give the best results. So important is it that it is practically impossible for any one who would design buildings that would live, to get along without it.

Such an education is to be found only in an architectural school with a regular curriculum.

There are many such abroad and in America. The schools of

England and Germany have served as the model for several of our earlier American schools, but they are too academic, too impractical, and too much at variance with modern pedagogical methods to be of great value to us.

The French National School of Architecture has stood the test of time and given grand results. It does accomplish all that we have shown to be essential to a well-rounded education. It gives a knowledge of fundamentals. It develops the æsthetic and the constructional side by side and together in a most thorough way. It makes men work and concentrate. It inspires them, and opens up the imagination. It makes them think, and it makes them feel. However, it is too strong meat to begin on. One gets from it what one takes to it. Far too many Americans, lacking thorough preparation before leaving America, miss the whole purport and intent of the French school. One must have the best America can give before going there, both in office and in school. The best general education, several years of office, and five years of America's best architectural school is not a bit too much.

It remains to decide what is the best curriculum for an American architectural school. Here for several years a man is concentrating to become an all-around, effective, living architect. He must develop heart and mind together. He must get down to fundamentals, and logically develop an understanding and appreciation of what architecture really means in all its phases, and he must realize the necessity for the harmonious co-operation of these different phases on all occasions. These various phases are as follows:—

The Æsthetic.

The Constructional.

The Business.

The Historical and Archæological.

The Social.

The Philosophical and Psychological.

The correlation of the above with all the other aspects and affairs of our life. They are important approximately in the above order. The first two are most intimately associated and interdependent, and should remain so in any curriculum.

In fact, the whole arrangement of a curriculum to treat each of the above phases in their proper proportion and relation to one another is very difficult. Most admit that it is done best in the *École des Beaux-Arts* in France, of which we have spoken before. Most American schools are modelled on it.

The first American school was the Massachusetts Institute of Technology, Department of Architecture, founded in 1865. This was followed in 1871 by the Architectural Department of Cornell, and in 1873 by that of Illinois University. The two latter were modelled on the English school. The former was adapted from the French school, and has consistently developed along these lines ever since, while, one after another, all but one of the other architectural schools have swung into line.

There is considerable diversity in their adaptation of the methods of the *École*.

First, in regard to the atelier system. In some the patrons are practising architects who give such time as they can to the students, at most not much. The brunt of the instruction is given by younger men with comparatively little experience. In others good practising architects come in rotation. The student no sooner gets used to the foibles of one than he is switched over to another, with the result that he arrives nowhere. At the Institute of Technology the work is all under one man, and that the best teacher who could be found. He, with the help of some of Boston's best practising architects, gives the students all the time they need.

In the judgment of drawings there is another difference. Those schools that do the Beaux-Arts Society problems only, cannot give their students the benefit of the criticisms of the Beaux-Arts Society jury who judge the drawings in New York. Further, this jury cannot know anything about the individual case of each student so as to properly consider his interpretation. For the best good of the student most of the problems should be judged by the patron and others who know how the student worked up his drawings.

Further, the inspiration and fervor of this teacher, together with the spirit handed down from class to class, beget a desire to work, well illustrated by the way men stick to it from 8 A.M. to 10 P.M.

day after day, and not only that, but by the way that most of the better men come back eagerly for a post-graduate year, where they can be directly under their more and more appreciated teacher.

Second, in regard to the proportion of time given to construction and practical matters. The Massachusetts Institute gives more time to this than any other school here, yet not as much proportionally as the *École des Beaux-Arts*. Not only has this not hurt their æsthetic growth,—for their success in the *Beaux-Arts* competitions proves this,—but in the mental stimulus which comes from studying mathematics they have found an antidote for the slovenly ways of thinking into which men designing only, often fall. Construction and design are so closely interwoven that, rather than decrease the amount of the former, I would increase it.

Third, on the side of general education no school gives as much as it would like, but in four years there is hardly time for more. All of which makes a good general education and, if possible, a college course very desirable before entering the architectural school. A good library goes a long way to help, and here, again, the Institute, with its splendid working library and its 16,000 photographs, gives a man an excellent start. And in this it is aided by the proximity of the Boston Public Library with its abundance of art works, the Boston Museum of Fine Arts and the art schools and exhibitions. And then, too, the general educational level is raised by the large and constantly increasing proportion of graduate students who bring with them, and unconsciously spread among their associates, some of the general culture they have acquired elsewhere.

Fourth, on the side of bringing the men in contact with the great architects of America by having them come around and give talks on their work,—there is an idea which has proved most successful at the Massachusetts Institute of Technology, for it gives the students an insight into the one phase of architecture about which they know least, and yet probably about which they want to know most. For the little problems of every day are vital. They illustrate the purport of the work the men are doing in the school, and help them with many applications to this work.

In every way the Architectural Department of the Massachusetts

Institute of Technology is a living organism, growing with the changing needs of the day, but ever steadfast in clinging to the principles which have given it its strength.

And so we, as graduates of the Massachusetts Institute of Technology Architectural Department, stand up for it. It is because we are only too glad to have a chance to do so, not only on account of our gratitude to those to whom we owe so much for the sound training and inspiration that we received under their guidance, but because after many years of further education and practical experience, where we have seen much of the other architectural schools and their results, we are more than ever convinced of the preponderating worth, the soundness and effectiveness of the work done in the Architectural Department of the Massachusetts Institute of Technology.

*GEORGE B. FORD, '00.

Annual Alumni Banquet

The annual alumni reception and dinner will be held at the Hotel Somerset, Boston, on Wednesday, January 19, at 6.30 P.M. The speakers will be President Maclaurin, of Technology, President Lowell, of Harvard, Judge Henry K. Braley, of the Supreme Judicial Court of Massachusetts, and Dr. David Snedden, State Commissioner of Education. The price of banquet tickets will be three dollars.

* Mr. Ford is fitted to speak with authority on the subject of architectural education. After being graduated from Harvard University, he came to the Institute and entered the Department of Architecture. Here he won both the Bachelor's and the Master's degree. He then spent some time in office practice, and finally entered the École des Beaux-Arts in Paris, where he received the diploma, the highest honor a foreigner can obtain. Mr. Ford's interest in architectural matters is further shown through his many well-written articles in professional journals. That his way of life has also led to the best practical result is proved by the high position which he now holds.

THE PRESIDENT'S ANNUAL REPORT

Dr. Maclaurin advocates a Courageous and Active Policy to
meet the Imperative Demand for a New Site

Dr. Maclaurin's first report as President of the Institute was recently issued, and can be had by making application to the Registrar.

In it he reviews the history of the past year, showing that the work within the Institute has been one of steady progress, not marked by any modification of the conditions or methods of the previous year. Reference is made to the large amount of important research that is being carried on by the professors in addition to their regular work, which, Dr. Maclaurin states, is the very breath of life of a scientific school. "The Institute has been peculiarly fortunate in having on its Faculty men who recognize this thoroughly, and it is not a little remarkable that many of the most important contributions to pure science that have been made within recent years in America have been made by graduates of the Institute of Technology, which on its scientific side is popularly, although of course quite erroneously, supposed to be almost exclusively a school of applied science."

The President speaks of the increasing interest of the alumni and the value of the work the Association is now doing; reference being made to the Reunion and to the creation of the Alumni Council. In regard to the future he says,—“As to the future policy of the Institute as a whole there seems no call for radical change as regards its educational methods and its aims and ideals.” He refers to the devotion of the Faculty and to their readiness to sacrifice financial interests because of their belief in the Institute.

The President makes a strong plea for a larger grant from the State, which at the present time seems absurdly inadequate and far below the grants received by western colleges and many similar institutions in the Old World.

In dealing with the problem of a new site and buildings, Dr. Maclaurin sums up the reasons that make this change absolutely essential, emphasizing the fact that, while we must place our chief reliance for gifts on Massachusetts, the Institute is national in its scope and in its services, and so we may reasonably look for help in many quarters.

In closing, the President said: "I realize that most of the Institute's difficulties are due to its success and not to its failure, and I believe that a splendid future is assured to it, if at this critical stage of its history it does not falter through lack of courage. It seems to me that when the opportunity arises it should sell that part of its property which is unrestricted,—that is, all except the Boylston Street property,—and with the proceeds secure a new site. It should then throw upon the public the burden of completing the purchase money of this site, if any complement be required, and of putting up new buildings and improved equipment. The Boylston Street property could be retained for carrying on that part of the work that can with the least inconvenience be separated from the rest until the time comes when restrictions upon its use can be removed at a reasonable cost. Such a policy involves some risks; but these are almost as inevitable to a progressive educational institution as to a progressive business. The question whether the risk is one that can reasonably be taken is, of course, a question for the individual judgment. My own opinion is that the risk is not great, provided only we have the co-operation of all those interested in the Institute. It is scarcely necessary to add that the question of the future location of the Institute is one that should be settled as promptly as possible. It has been before your Corporation for many years. If it were settled, the Institute could devote all its energy to the really great work of developing its educational resources; for, of course, its primary and fundamental problems are, and must always remain, educational."

The President pays a high tribute to the "manifestation of the Technology spirit at its very best" by Dr. Noyes, who laid aside his chosen work in order to devote his time and energy to the administrative duties of the Institute.

THE SEDGWICK PORTRAIT

Presented to the Institute by Former Students of the Biological Department—To be Unveiled this Month

A portrait of Professor Sedgwick, by William Churchill, was presented to the Institute on Tuesday night, December 21, by the former students of the Biological Department. This portrait has been painted with the proceeds from the sale of the *Festschrift* volume of original scientific papers prepared and published by past students in the department three years ago. Mr. J. L. Batchelder ('90) presided at the dinner, and there were present, besides Professor Sedgwick, President Lowell of Harvard University, President Maclaurin, President Webster of the Alumni Association, Messrs. Charles W. Hubbard, George Wigglesworth, John R. Freeman and Arthur T. Bradlee of the Corporation, Mr. A. F. Bemis ('93), and Professors Prescott and Winslow, Dr. R. P. Bigelow and Mr. W. L. Underwood of the Biological Faculty. The portrait was presented on behalf of the past students of the Biological Department by Professor Winslow and accepted by President Maclaurin, who spoke particularly of what Professor Sedgwick has done for the Institute in building up the Department of Biology. President Lowell described the wide public service which Professor Sedgwick has rendered to the community in connection with the Massachusetts State Board of Health, with the cause of civil service reform, with the organization of the work of the Lowell Institute, and in many other ways. Professor Sedgwick himself spoke briefly on "The Rewards of the Teacher."

Professor Winslow said in part:—

"Sedgwick is painted here in the gown and hood of the honorary doctorate of science which he received last spring from his Alma Mater, Yale, with the well-earned tribute: 'Scholar, investi-

gator, teacher, patient and courageous fighter of disease, he has been a splendid public servant. It is our belief that Yale produces men who put service first, whose ambition is to be useful. It is a pleasure today to add to the honor of a son of Yale, who for over a quarter of a century has been a faithful teacher in a great institution and whose public career has been a multitudinous blessing.'

"It is not the scholar and investigator, the founder of the science of Epidemiology in this country, the unquestioned authority on the sanitation of water supplies, to whom we want particularly to pay our tribute. Let the *Festschrift* volume stand for that. It is Sedgwick, the teacher, we want this portrait to represent. There are scientific investigators in every corner of every college; but the teacher is a rarer thing. Mark Hopkins, Agassiz, Gilman, Shaler, Sumner,—there have never been many such as these. But in this company Sedgwick belongs.

"His voice has gone far beyond the walls of the Institute. From the young State of Washington to the old Commonwealth of Virginia he has sounded the bugle-call to public health. No one who has not stood close to this movement can realize to how great an extent the sanitary awakening which is sweeping like a wave over this continent is the work of one man alone. What Sir John Simon was to England fifty years ago, Sedgwick has been to America today.

"To us in the Department of Biology, however, even this wide public service is less significant than the deep effect which Sedgwick's personality has had on those who in laboratory and classroom have come more intimately under his hand. The community owes him something: we owe him everything. We know not simply the mind wise and judicious and sane, well stored with facts, quick to see the hidden relations of things. We know something of the man himself, of the calm courage with which he faces the unknown and of his simple and absolute devotion to service. I think no man could go out and live to himself alone after knowing how Sedgwick looks at life. We may say of him in the words of the poet he loves:—

The Sedgwick Portrait

11

'To us thou wast still
Cheerful and helpful and firm!
Therefore to thee it was given
Many to save with thyself.'

"All over this country are scores of young men, and a few not so young, who will say to you, as I say to you, President Maclaurin,—The best of what I am I owe to Sedgwick. He taught me how to live,—in the light of scientific truth. He taught me why to live,—that the world may be made better. Where I go, I go because he sends me. Whatever I do, I do it in his spirit. Cherish him, President Maclaurin, and cherish this portrait, our tribute of gratitude, for his sake. The Institute of Technology will never fall short of its high ideals while it numbers such men as Sedgwick among its leaders."

President Maclaurin plans to unveil the portrait at a general convocation in January, and it will be hung in the library of Rogers Building, awaiting the time when the Institute shall have a Faculty Room with a collection of portraits of all its famous men.

Result of Election for Alumni Officers

As there were no other nominations for officers of the Alumni Association than those presented by the nominating committee, the ticket was declared elected on the closing of the polls December 20. The officers are as follows: president, A. F. Bemis ('93); vice-president, Franklin W. Hobbs ('89); treasurer, Walter Humphreys ('97); executive committee, Walter E. Piper ('94), George W. Swett ('03); representatives at large, Charles Hayden ('90), Allan W. Rowe ('01), Eben S. Stevens ('68), Stoughton Walker ('87), George V. Wendell ('92); Advisory council on athletics, J. L. Batchelder, Jr. ('90). Announcement will be made of the three new members of the Corporation when they have been chosen by that body in March.

TECHNOLOGY AERO CLUB AT WORK

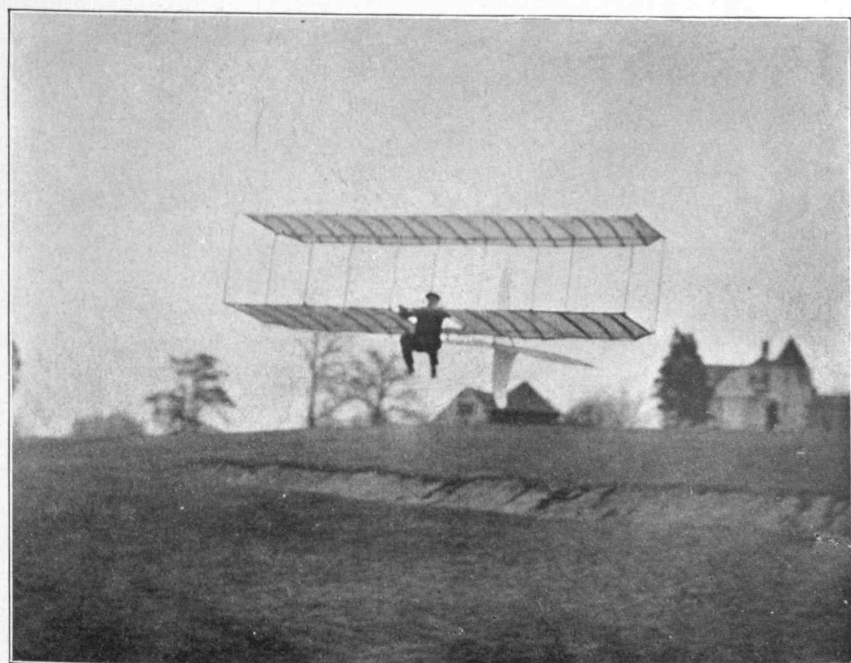
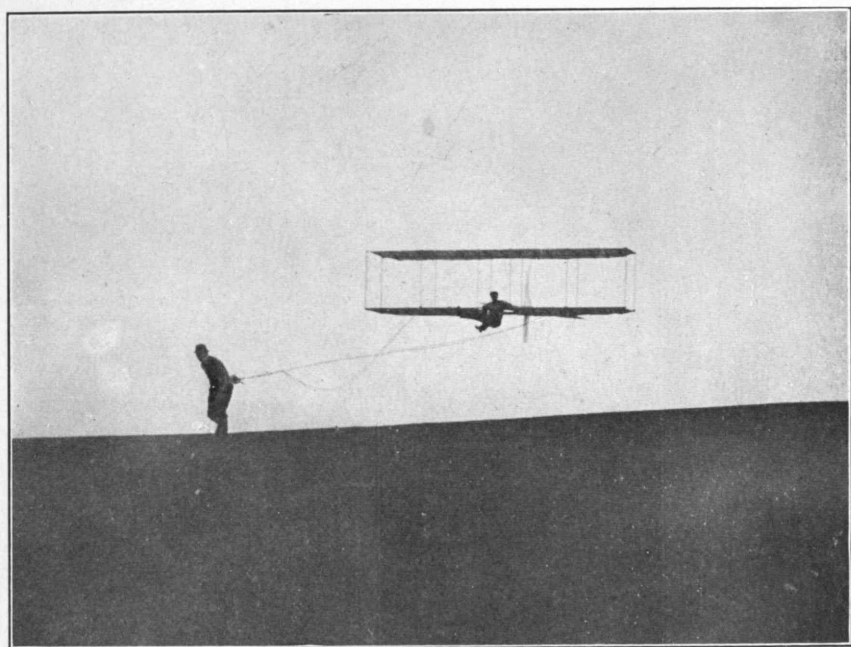
Students Organized to study Aeronautics—Glider nearly Completed and a Power Machine Contemplated

Among the students at the Institute this year are several who have given more or less attention to aërial navigation, some of them having had considerable practical experience both in this country and abroad.

Shortly after the beginning of the school year an aëro club was formed, with enough serious purpose to make it practically a laboratory option in aëronautics. The active membership was limited to those who would pledge a certain definite amount of time regularly each week to the work of designing and constructing and who would contribute funds to provide the necessary apparatus. The membership includes men who have worked during the summer with the Wright aëroplane at Washington, men who were intimately connected with Dr. Bell's aëronautical experimental station, others who have studied aviation abroad and some who plan to devote their lives to the subject.

For the present the club is using the mechanical laboratory on Garrison Street as an aërodrome, which is now sheltering the nearly completed glider aëroplane, and resembles on a small scale the Vosin and Astra aëroplane factories in France. The work is in charge of an engineering committee, who look after the details and keep records of the work of each man. The first Technology aëroplane, which is under way, is a glider of approved type which will probably be ready for flight before the REVIEW goes to press. The machine is in type a biplane, having a width of 22 feet; depth of planes, 5 feet; total surface, 210 square feet; weight, 70 pounds. The struts are of spruce, cigar-shaped sections, and the planes are parabolic, arched 1 to 20.

The apparatus is controlled by a front elevating plane and wing



TECHNOLOGY STUDENTS EXPERIMENTING WITH GLIDER AEROPLANE AT
BRAE-BURN

tips, and the stability is aided by a small rear tail. As it is impossible for busy Tech men to journey to favorable hills or wait for suitable winds, the machine will be propelled by a towing rope. The design of the present machine is partly based on experiments made with a glider belonging to one of the members. This glider was made soon after the term began, and the pictures accompanying this article shows it in flight at the Brae-Burn Country Club. The sensation of gliding is the grandest imaginable; it is far more fascinating than any other form of locomotion. Most of the world's noted aviators have begun experiments in this way with gliding machines. Beyond the experiments in gliding the Aëro Club hopes that it will be able to build a power machine next year. The energies of the club will be devoted to designing such a machine from the best suggestions offered as a result of experimentation during the present season.

The organization is somewhat handicapped, however, because the mechanical laboratories which they are now using will soon be needed for work in filing and chipping, and another suitable work-room must be found. Before the year is over, each member of the club will have experienced the wonderful thrill of riding on the wind, and will be qualified to handle any power machine built.

E. N. FALES, 'II.

A Swindler About

The secretary of the Washington Society writes that a clever swindler has been getting money from college men in Washington and Philadelphia, and possibly elsewhere. He represents himself to be a Tech man suffering from financial embarrassment, and has collected considerable money.

The Washington Society has arranged to have any such applicants referred to the secretary, and, if the man is found to be really a Tech man in unfortunate circumstances, he will receive assistance.

PROFESSOR WINSLOW'S PROMOTION

He has been called to a Position of Great Scientific Importance
in New York

On December 18 public announcement was made of the appointment of Charles-Edward Amory Winslow, S.M., Assistant Professor of Biology at the Institute, as Associate Professor of Biology in the College of the City of New York and Curator of Public Health in the American Museum of Natural History in Central Park. The announcement was received at the Institute with mingled satisfaction and regret,—satisfaction that one of the ablest and most devoted of the sons of the Institute should have won outside recognition of so much distinction, and regret that Professor Winslow's removal to New York must deprive the Institute of one of its most industrious and fruitful investigators and one of its most capable teachers.

Professor Winslow was born in Boston in 1877, a son of Erving Winslow, the well-known publicist, and Catherine Reynolds, long a favorite exponent and teacher of the dramatic arts in Boston. He was prepared for the Institute in the Boston public schools, and took his Bachelor's degree with distinction, in Biology, in 1898. After a year spent in graduate work, he obtained the degree of Master of Science, his thesis—an investigation of certain problems connected with the seasonal distribution of typhoid fever and the effect of low temperatures upon the typhoid bacillus—being afterward published in collaboration with Professor Sedgwick, at whose instigation the work was undertaken, as a special memoir of the American Academy of Arts and Sciences. These researches have since proved to be of fundamental importance and the basis of many other valuable inquiries. For short periods Mr. Winslow was occupied in official public health service, first as Assistant Health Officer in Montclair, N. J., and afterwards as Special Assistant in the Engineer's Office of

the State Board of Health of Massachusetts. He next served as Assistant in Biology at the Institute in 1900 and 1901 and Instructor in Sanitary Bacteriology (1902-05), since which time he has been Assistant Professor of Sanitary Biology and also (since 1903) Biologist-in-Charge of the Sanitary Research Laboratory and Sewage Experiment Station of the Institute.

In his last position he has had an unusual opportunity to undertake novel and interesting investigations upon various methods of sewage purification, as well as to organize and administer an important branch of the work of the Biological Department; and those who are familiar with what has been done at the Albany Street Station since 1903 do not need to be told how ably or how successfully Professor Winslow has administered this trust. Five volumes of papers embodying the work of the Laboratory and Experiment Station have now been issued, and so great has been the demand for these in Europe as well as America that some of them are already out of print and not to be had at any price.

Professor Winslow is a member of various biological, engineering, sanitary and other scientific associations, and has been an extensive contributor to biological, technological and other scientific periodicals on subjects connected with public health, bacteriology, sewage, typhoid fever, etc. His literary interests, abilities and productiveness are somewhat unusual, and have borne fruit not only in a translation of Sudermann's "Heimat" under the title of "Magda" (1896), but also in a work (with his associate, Professor Prescott) on Water Bacteriology in 1904, a work on Industrial Microscopy in 1905, a volume (in which he had the constant collaboration of his wife) on the "Systematic Relationships of the Cocci and the Principles of Bacterial Classification," in 1908, and still more recently, in what is certain to be an epoch-making treatise now in the press, on Sewage and the Disposal of Sewage, in collaboration with Professor L. P. Kinnicutt (M. I. T. '75), of the Worcester Polytechnic Institute, and Mr. R. Winthrop Pratt (S.B., M. I. T. '98), Chief Engineer State Board of Health of Ohio.

Professor Winslow is at present absent on leave to take in part the place of E. O. Jordan (M. I. T. '88), Professor of Bacteriology

in the University of Chicago, while the latter is in Europe on his sabbatical, and in part to give at that university and in the Chicago School of Civics and Philanthropy lectures on Sanitary Science and Public Health. He will return to the Institute about March 20, and remain until he leaves for New York in September.

The matter-of-fact record here laid down is more characteristic and more telling than any other statement could possibly be of Professor Winslow's exceptional attainments and services to the Institute. In 1907 he was married to Miss Anne Fuller Rogers, of Boston, formerly a special student of biology at the Institute, whose original work in bacteriology has likewise been noteworthy, and who as a loyal student and worker at the Institute will be hardly less missed than will her husband.

Mrs. Maclaurin's Christmas Entertainment

An unusual Christmas entertainment was given to the students who were unable to go to their homes for the holidays by President and Mrs. Maclaurin, on Christmas Eve, at their home, 187 Bay State Road.

The principal feature of the entertainment was a "mumming play," representing the heroic deeds of Saint George, and was a reproduction of an old English Christmas custom. The characters were, Father Christmas, Saint George, a dragon, a Turkish knight, a giant and a doctor. The doctor was a needed member of the troupe, for, when the play was given in the open hall of a manor house, the dead characters had to be restored to life in order to make their exit. The play was presented by members of former Tech Shows.

There was, of course, a Christmas tree, with its accompaniments. Professor Arlo Bates read the "Christmas Carol," and some of the old Christmas songs were sung by members of the Glee Club. Mrs. William Barton Rogers received with Mrs. Maclaurin.

SHIP MODEL EXPERIMENTS

Investigations in Ship Design that will be of Great Importance to Naval Architects

The Department of Naval Architecture is about to undertake important investigations concerning the propulsion of ships, by aid of a navigable model about forty feet long. Funds for prosecution of this work for a series of years have been provided by a friend of the department.

The problem of propulsion may be said to have three parts: (1) the resistance of the ship,—that is, the force required to maintain the speed; (2) the power applied to and delivered by the propeller; and (3) the effectiveness of the combination of the propeller and the ship. From choice and necessity the propeller is placed at the stern of the ship where it can take advantage of the wake, but where it disturbs the natural flow of water, and in consequence increases the resistance above what the pull on a tow rope would be. This combined effect is complex and obscure, and has given rise to more difficulty than any other problem connected with propulsion of ships. This is the problem which has been chosen for investigation by aid of the navigable model.

In order that the experiments shall be connected with the real conditions of ship propulsion, the model will be a reduced copy to one-fifth scale of the United States steamship "Manning," which has been chosen as a prototype because the writer was able to make on that ship a most successful series of progressive speed trials, which were reported to the Society of Naval Architects and Marine Engineers in 1899. After the relation between the trials of the ship and the experiments on the model has been definitely established, it will furnish a certain basis for determining from model experiments what may be expected from full-sized ships. The method has

been used with satisfaction in Great Britain for investigating new types of propulsion, notably of the "Lusitania" and the "Mauretania." Messrs. Denny Brothers, of Dumbarton, who have long used their model basin for developing new types of ships and propulsion, have chosen to use such a navigable model for investigating the design of the "Otaki" which has a combination of reciprocating engines and a low-pressure turbine.

The department has been promised the co-operation of the Model Basin at the Washington Navy Yard, and will have tests made of a model twenty feet long. The propeller for the forty foot model will also be tested at the Model Basin.

The model boat is building at the yard of Stearns & McKay at Marblehead. The propulsive machinery will consist of a gasoline electric generating set and a motor geared to the propeller shaft,—a combination which is convenient for experimental work, as conditions can be controlled over a wide range and the measurements of power may be simple and accurate. The machinery can also be easily transferred to other hulls as the work progresses.

After experiments have been made with the model built and engined to correspond with the prototype, various forms and locations of propellers will be used, including twin and triple propellers, especially of the type used with marine turbines. The form of the hull will then be changed so far as may be without rebuilding, and hulls of various forms will be built to extend the range of experiments.

The model will also be used to study the problems of steering and manœuvring,—a field that has received comparatively little attention.

This method of investigation has the advantage that a proposed design may be tried on a small and inexpensive scale, simulating the conditions of service, including performance in rough water. After satisfactory conditions have been attained by aid of the model, the dimensions and conditions can be determined for the full-sized ship by the theory of mechanical similitude. The fact that this theory leads to the assignment of somewhat higher power to the ship than may be needed gives the designer a margin that may be

grateful, but which can be controlled by the preliminary experiments with a full-sized ship for a prototype.

This equipment will be used mainly during the summer, by the head of the department and his colleagues for original research. It is expected that results will be obtained that will clear up certain obscure places in the theoretical work and design of the students of the department. The students will also receive training in the use of the equipment, which will thus form a part of the laboratory equipment of the Institute.

C. H. PEABODY, '77.

Report of Treasurer Hart

The report of Francis R. Hart, Treasurer of the Institute, which has recently been presented, is of particular interest because it is the first report of this kind made out according to the standard schedules recommended by the Carnegie Foundation for the Advancement of Teaching for universities, colleges, and technological schools throughout the country.

The first item shows that the income for the year was about \$545,000, while the expenses were nearly \$576,000, making a deficiency of almost \$30,000,—practically the same as that of a year ago. About the only gift received during the year for general expenses was that from the Technology Fund, raised by the alumni, which amounted to over \$41,000. If it had not been for this contribution, the deficit would have been over \$70,000. The gifts for special purposes were, \$8,000 for a sanitary research fund, \$3,000 for the physico-chemical research fund, \$1,500 for the naval architectural fund, and some smaller gifts, all of which, including the alumni fund, amounted to \$75,000. The total contributions of the alumni on account of the Income Fund is \$168,000 up to date. The last instalment is due in June.

The Walker Memorial Fund now amounts to \$120,000.

Mr. Hart's report shows the invested assets are \$2,185,822. It is a pleasure to state that the Institute has no debt.

MEETING OF THE ALUMNI COUNCIL

New Method of Naming Nominating Committee Proposed—
Also a Committee to be Custodian of all Funds—Mr.
Little Proposes a Congress of Technology

The second meeting of the Council of the Alumni Association of the Massachusetts Institute of Technology was held at the University Club, Boston, December 22, 1909, at 6.30 P.M. Supper was served by the club at 7 P.M.

The meeting was called to order by President Webster at 8.45. There were present 44 members, as follows: Officers, president, Edwin S. Webster, '88; vice-president, Albert F. Bemis, '93; secretary-treasurer, Walter Humphreys, '97; executive committee: Howard L. Coburn, '87, W. Spencer Hutchinson, '92, William S. Johnson, '89; ex-presidents: W. B. Snow, '82, Everett Morss, '85, Frank L. Locke, '86; representatives-at-large: Edward Cunningham, '91, Joseph H. Knight, '96, Arthur Winslow, '81, Charles R. Cross, '70, Arthur D. Little, '85, Charles T. Main, '76, George F. Swain, '77, James P. Tolman, '68; class representatives: '68, Robert H. Richards; '74, George H. Barrus; '75, Thomas Hibbard; '77, R. A. Hale; '79, E. C. Miller; '81, John Duff; '82, James P. Munroe; '85, I. W. Litchfield; '86, Arthur G. Robbins; '87, E. G. Thomas; '88, A. T. Bradlee; '89, W. H. Kilham; '90, W. Z. Ripley; '91, Charles Garrison; '92, Leonard Metcalf; '93, Frederic H. Fay; '95, Andrew D. Fuller; '97, C. W. Bradlee; '98, C.-E. A. Winslow; '99, H. J. Skinner; '00, N. J. Neall; '03, F. A. Olmsted; '06, G. F. Hobson; '07, Lawrence Allen. The following societies were represented: The Washington Society of the M. I. T., The Technology Club of New York, North-western Association of the M. I. T., Technology Club of Milwaukee. The following guests were present representing a Corporation committee and several special committees appointed by the Alumni

Council: President Maclaurin, Messrs. Everett Morss, W. L. Putnam, J. P. Tolman, A. A. Noyes, Henry Howard, Henry Morss, Major Briggs, Paul Winsor and an undergraduate, John S. Martin, representing the Musical Clubs.

The record of the previous meeting and those of the executive committee meetings since the first meeting of the Council were read and approved.

A communication from a special committee appointed by the Corporation of the Institute to make changes in the by-laws of the Institute was presented by its chairman, Mr. Everett Morss. To change the method of electing alumni term members on the Corporation, he outlined a plan for revising the by-laws whereby the Corporation should have presented to it for election three names as chosen directly by the Alumni Association rather than to have to select three from the five now nominated.

A committee that was appointed to consider necessary changes in the constitution for the appointment of various committees by the Council reported and outlined the provisions for appointing a nominating committee by the Council. After discussion it was decided that this committee should be made up of nine members,—three appointed each year, instead of six members, two elected each year. A scheme for having one committee of trust for all permanent funds of the Association was outlined, and the Council voted that an amendment should be planned whereby the funds should be controlled by vote of the executive committee, subject to the approval of this committee.

The committee on student welfare reported, through its chairman, Professor Noyes, that several questions had been referred to this committee, and that the committee has met with student organizations in order that the undergraduates might appreciate that there is such a committee to appeal to, and to present their propositions. It also has been able to assist some students, who, without aid, would have had to withdraw from the Institute, and this committee appeals to the alumni individually for assistance in carrying out this important work which it has attempted. Contributions may be sent to Professor Noyes, the chairman. The matter

of the supplementary report of the advisory council on athletics was referred to it, but the committee asks that at future times such questions be not referred to it, but to save time it reports this time. It believes it inadvisable for the alumni to start a guarantee fund for athletic expenses, as suggested, but that the advisory council should attempt to raise such funds from individual alumni. It is in sympathy, however, with the appeal of the council on athletics. The committee further recommends that a committee of two be appointed on the Council to act with the chairman of the Institute committee of undergraduates as a Tech Show advisory council. The application from the state secretary of the Y. M. C. A. requesting that the Alumni Council indorse officially the movement to secure funds for the payment of a permanent secretary of the Technology Christian Association during the present school year, was referred to the committee, and it reports that it is the opinion of this committee that it is for the present better that the movement be carried on independently by those directly interested in it without official indorsement by the Council.

The committee reported in regard to the tour of the Musical Clubs,—and the Association indorsed their plan if it is upon a sound financial basis,—that there will be announcements made in any notices issued by the alumni office, and it recommends that the Council grant the use of the moving-picture films taken at the recent Reunion.

The committee on the establishment of a summer camp for the summer school reported, "Your committee approves of the inclusion of work under a summer school of civil engineering, as an integral part of the course in civil engineering, believes that the cost involved will be from \$16,000 to \$20,000 in excess of the cost or rental of the necessary land, urges the rental of the needed property, with option to buy at an agreed price, as a safer and wiser policy than immediate purchase of it, and recommends, in consequence of the larger present need of the Institute for new building site and buildings, that the raising of funds for the summer school of civil engineering be not undertaken by the Alumni Association at the present time."

It was voted that a copy of the report of this committee be sent to the Executive Committee of the Institute through the President of the Institute.

The committee appointed to consider the advisability of establishing local scholarships made a report of progress through its chairman, Professor Winslow, and stated that the committee purposes to meet with people of the suburbs of Boston, and attempt to establish at these places scholarships which will be available for students of high standing and those in need. This will insure that students of this class may have the name of the Institute continually before them, and the chances to go if they cannot afford it themselves. It is believed that to have the name of the Institute connected with such scholarships will be beneficial to the school itself. Already in Brookline such a plan is well under way.

Through its chairman, Mr. Howard, the committee appointed to consider the advisability of establishing a course in Aëronautics also made a report of progress. Another member of the committee, Mr. Henry Morss, gave an informal report of his investigations of the amount of work done in this line in Germany, France and England. It was suggested by a member of the Council that a prize be offered by the Association to the student at the Institute who devised the most satisfactory glider or aëroplane.

Mr. Litchfield reported informally for the Reunion committee, and immediately after this Mr. Fay presented a watch to Mr. Litchfield on behalf of the committee in token of the appreciation of the individuals of the Reunion committee for the substantial and enthusiastic work done by its secretary, Mr. Litchfield. The gold watch and chain were accepted humbly and with gratitude.

A financial report was made by the treasurer of the committee, Mr. Henry Howard, and President Webster announced that it was the purpose of the committee soon to meet and turn over the balance of the funds to the Alumni Association.

Mr. A. D. Little presented a preliminary outline of a prospectus for a suggested Congress of Technology to be held in June, 1910, under the auspices of the Massachusetts Institute of Technology. The subject in detail is to be printed and circulated among the

Council. It was voted that a committee of five be appointed to consider this and report to the Council.

President Maclaurin addressed the Council, and noted the active interest shown by the alumni, and stated that he appreciated the possibilities of the Alumni Council. He noted that its proper function was that of an advisory body, and assured the Council that it could help the Corporation in many ways by its power of suggestion. He also stated that, while its suggestions might not at all times be accepted, because the carrying out of some of them would, in cases, require more funds than the corporation could at the moment assign to them, yet these suggestions would always be welcome. He also noted the valuable suggestion made by Mr. Little in regard to the Congress of Technology, and could see what a great aid such a convention could be to the Institute.

The meeting adjourned at ten minutes past eleven.

WALTER HUMPHREYS, *Secretary.*

William B. Thurber Appointed Treasurer

At the meeting of the Corporation held December 8, William B. Thurber ('89), of Milton, was elected Treasurer to succeed Francis R. Hart. Mr. Thurber is chairman of the school committee of Milton, treasurer of Milton Academy and of the Milton Savings Bank. He has a wide business experience, and is an energetic and enthusiastic alumnus of the Institute.

Mr. Hart will still remain actively identified with the conduct of the Institute, as he was appointed to fill the one vacancy in the life membership of the Corporation. During the year Francis Blake and David R. Whitney, of the Corporation, resigned. The appointment of Mr. Hart makes the number of life members 35 which is the full quota prescribed by the by-laws.

CLASS SECRETARIES TO HONOR J. P. MUNROE

Dinner to be given Distinguished Alumnus—Discussion as to Future Policy of the Association of Class Secretaries

At the thirteenth annual meeting and dinner of the Association of Class Secretaries, held at the Technology Club November 22, the question of the continuance and future policy of the Association came up for discussion.

An argument was advanced that, although the Alumni Council has now taken over the principal activities of the Association, such as the publication of *THE TECHNOLOGY REVIEW*, the management of Commencement festivities, etc., a very important feature of alumni activity had not been provided for because of the fact that only about one-half of the secretaries of graduate classes are members of the Council, and, since alumni advancement is largely due to the individual work of the class secretaries, it is desirable to have some form of association among these men which would bring them together to discuss methods of increasing class interest.

The consensus seemed to be that the work of the Alumni Council could not wholly supplant that of the class secretaries, for, although the Council would deal with the larger questions relating to the whole Association, the other questions of direct interest to the classes, as represented by the class secretaries, would properly remain for the consideration of the Association. In order to thoroughly canvass this matter, however, it was voted that a committee of five be appointed to consider whether the Association of Class Secretaries should be continued or not, and, if continued, what line of work it should undertake, this committee to report at the next annual meeting. The committee consists of W. B. Snow ('82), first secretary of the Association of Class Secretaries and past president of the Alumni Association; A. F. Bemis ('93), president of the Alumni Association for 1910; Dr. H. W. Tyler ('84); G. DeW. Marcy ('05);

and Mr. F. H. Fay ('93), secretary of the Association of Class Secretaries.

The secretary then stated that early in the year a movement was started to express in some degree the obligation of the Association to Mr. James P. Munroe ('82) for his direct service to the Association. On account of the press of other alumni matters and the work attending the Reunion a suitable opportunity was not then presented. He said that the distinguished services of Mr. Munroe to the Institute were so manifold that, in order to keep the dinner list within bounds, it seemed best to consider principally his relations to the Association as managing editor of *THE TECHNOLOGY REVIEW*. He, therefore, moved that the Association give a dinner to Mr. Munroe in recognition of its obligation to him, that the former members of the Association be asked to participate, and that the arrangements be put in the hands of a committee to be named by the chairman. The motion was enthusiastically received and carried by unanimous vote, and a committee, consisting of Edwin S. Webster ('88), Professor Robbert H. Richards ('68), Dr. Francis H. Williams ('73), Walter B. Snow ('82), Dr. Arthur A. Noyes ('86), Arthur D. Little ('85) and F. H. Fay ('93) was appointed.

The dinner will occur at the University Club, Tuesday evening, January 11.

Student Banking System

The bursar's office is continuing the student banking system, which was a marked success last year, over \$50,000 having been handled. This system is intended primarily for students coming from a distance who might have difficulty in cashing checks at the local banks for want of identification. The bursar's office accepts deposits, cashes student drafts and checks, and is in effect a student's bank. It has proved to be a great convenience and is becoming very popular with the undergraduates generally.

TOUR OF THE MUSICAL CLUBS

Great Interest in the Coming Trip in Local Alumni Centers— Clubs are Equal to the Best

Through the persistent energy of Mr. William W. Warner ('11), general manager of the Musical Clubs, the alumni of several cities have guaranteed enough money to warrant the Alumni Council committee in approving the enterprise and in urging the members of the local alumni associations to do everything in their power to make this innovation a brilliant success. The itinerary will be as follows:—

Buffalo	January 31	Rochester	February 4
Detroit	February 2	New York	February 5
Chicago	February 3		

The announcement of the tour of the Clubs has awakened the greatest enthusiasm among Tech men in the cities where entertainments will be given, and one local association had sold more than enough tickets to fill the guarantee before the REVIEW went to press.

Since the itinerary was published in the notice of the alumni banquet, the plans have been changed as above.

The great increase in musical interest at Technology has brought out an unusual combination of talent this year, and the possibility of a western trip has spurred the individuals as well as the professional coaches to bring the quality of the work up to the best college standard. From the large number of men composing the Banjo, Mandolin and Glee Clubs, forty men have been picked to make the trip. The alumni of the various cities where dates have been made are highly enthusiastic, and the visit of the Clubs will increase the interest in local alumni associations all along the line. It was mainly through the North-western Association that the trip became pos-

sible, and immediately following the action of this association came several guarantees from other cities.

The Alumni Council has voted to allow the Clubs to use the films of the moving pictures of the Reunion, and the moving pictures of the Technique Rush will also be shown. There will be a reception and dance following each performance. In New York the Clubs appear at the banquet of the Technology Club, which is making special preparations for the largest attendance in its history.

The New Catalogue

The new catalogue, which made its appearance early in December, shows that we have at the Institute 210 on the instructing staff, of which 93 are members of the Faculty. There are 4,127 living graduates from the Transvaal to Russia and from Argentine to Nova Scotia. At least one Technology graduate may be found in every state in nearly every nation on the map. There are 1,479 undergraduates. The new course in electro chemistry listed as course XIV. takes the place of course VIII., option 3. One of the most marked changes occurs in course III. In the second year, mineralogy has been omitted, giving sixty hours' recitation in the first term. This time is taken for qualitative analysis and English literature. physical laboratory and precision of measurements are substituted for stratigraphic geology in the second term. In the third year economic geology and German are no longer required, the time being devoted to assaying and quantitative analysis. German has been omitted during the second year in the architectural course, perspective and water color taking its place. In course VI. economics of corporations is given in the first instead of the second term of the fourth year.

SOME FACTS FROM THE REGISTRAR

Registrar Humphreys' recent report to the Corporation contains some interesting facts. The total number of regular members on the instructing staff is 210. The ratio of the instructing staff to the student body is 1 to 7. Ten years ago this ratio was 1 to 8.8. This year there are 31 resident fellows and other candidates for advanced degrees against 26 last year. There are eight women at the Institute, two of them taking regular work. The number of regular students relative to the specials is larger. This year 69 per cent. of the students are regular against 65 per cent. last year. In the three upper classes 83 per cent. are taking engineering courses, 7 per cent. scientific courses, and 10 per cent. are in the architectural course. The number of college graduates is 200. Yale, Dartmouth, Harvard and the Naval Academy have the largest number of representatives out of 84 colleges. This year there are 183 new students from other colleges. The average age of the entering students is nineteen years. The average age of the graduating students last year was twenty-three years, one month. Every state except North Carolina, Idaho, Nevada and Oklahoma are represented. Thirty foreign countries send students here, of which 11 are from China and 10 from Mexico. Alberta, Bulgaria, New Zealand and Switzerland are represented for the first time. Massachusetts sends 57.5 of the men, 51 per cent. coming from Boston and the adjacent cities and towns.

Professor William T. Sedgwick has been notified of his reappointment by the Secretary of Treasury as a member of the advisory board to the Hygienic Laboratory, United States Public Health and Marine Hospital Service. His appointment is for a term of five years.

APPOINTMENT OF PROFESSOR BARROWS

Harold K. Barrows, formerly professor at the University of Vermont and a practicing hydraulic and sanitary engineer of Boston, has been appointed Associate Professor of Hydraulic Engineering at the Institute, to succeed Professor William E. Mott.

Professor Barrows was graduated with the Class of '95 at the Institute, serving here for a year as an assistant in the Civil Engineering Department. The next three years were spent in the office of the city engineer of Newton, and the following two years he was designer and computer for the Metropolitan Water Board of Boston, in which capacity he had much to do with the designing of the Wachusett dam, the Weston aqueduct, the Forest Hills reservoir and stand-pipe. He became professor of civil engineering in the University of Vermont in 1901, where he was in charge of the course in hydraulics. In 1902 he was appointed resident hydrographer and the next year assistant engineer of the United States Geological Survey, in charge of stream measurements in south-eastern New York, New Hampshire and Vermont. The following year he was appointed engineer of the United States Geological Survey, in charge of hydrographic work in New England and New York, which position he still holds.

Professor Barrows has made many contributions to the Report of the United States Geological Survey, and at the present time is preparing a special report on the "Water Resources of the Penobscot River."

Speaking of the traits of which the Scotch are often falsely accused, President Maclaurin of Technology, at the Tuileries banquet, declared, "It is said, if another nation twits us with our sins of superiority, we do not argue the question, but merely admit it."

“CONCERNING THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY”

The undergraduate committee which has in charge the publication of the book “Concerning the Massachusetts Institute of Technology” has made a financial report which shows commendable business enterprise and judgment. The book, which was compiled and published by the students on their own initiative, has proved to be a most valuable contribution. The report is as follows:—

Receipts.

Local ads	\$250.00
Tech alumni ads	235.00
Business cards	390.00
Subscription from M. I. T. for mailing	90.00
Complimentary subscriptions from M. I. T.	25.00
Other subscriptions	192.61
Interest	2.54
	\$1,185.15

Expenses.

Printing	\$479.20
Binding	469.66
Mailing:	
Postage	61.52
To Mailing Company	36.27
Stamps on hand	9.00
Post-office Box, 3 quarters	9.00
Stationery and miscellaneous printing	93.87
Exchange charges on checks	3.10
Miscellaneous	23.53
	\$1,185.15

1, the beginning of our fiscal year, and be incorporated in the Year Book to be issued in 1910. The most important change proposed is increase of dues, commensurate with the maintenance of the new club-house, to \$20 for resident members, payable semi-annually,—a reduction of \$10 to be made to men of the three latest graduated classes,—and to \$10 for non-resident members. These rates are lower than in most New York clubs offering equal facilities, but the board believes that, after the expenses of the first year are met, they will be sufficient, with the co-operation of Tech men such as has already been given in the increase of membership and attendance, to successfully maintain the club-house and enlarge the activities of the club.

The entertainment committee, with Mr. Joyce as chairman, has recently been augmented and reorganized, the new members including T. I. Jones, F. G. Cox, J. J. Donovan, Floyd Taylor, H. H. Kennedy, R. E. Doane and R. Stresau, and the plan has been adopted of having individual members of the committee responsible for successive smokers and entertainments to be given at least once a month up to June, inclusive. Thus Mr. Joyce will have charge of the smoker on December 20 at which Professor Prescott will speak, and Mr. Cox will conduct a smoker on January 4, at which we are to have the pleasure of greeting Mr. W. Lyman Underwood, president of the Technology Club of Boston, who will give us an entertaining talk on "Journeys with a Passamaquoddy Indian," with lantern illustrations, using colored slides prepared by himself.

A striking illustration of the fact that Tech men are sure to have a good time when they get together was afforded at the smoker on October 15, when the speaker we expected did not arrive and Mr. A. H. Kelleher ('06) kindly consented to speak, and gave a most interesting informal talk on his experiences and impressions during a recent trip through Brazil, Argentine Republic, Chili and Peru.

At a smoker on November 22 we enjoyed a pleasant social gathering and a charming, illuminating lecture by Mr. Henry L. Doherty, of the Industrial Utilities Company and the Improved Equipment

Company, on the subject "Modern Operation of Gas and Electric Companies."

Mr. Doherty first told us of methods he had inaugurated in soliciting business, which included the plan of daily gatherings of all the agents for exchange of experience, beneficial especially to the new men, and of requiring courteous treatment of consumers and careful attention to complaints. He emphasized the importance of forming personal acquaintances and friendships with consumers and of adjusting salaries of agents upon the basis of new business obtained. He said that two important results of his work had been the adjustment of rates on cost of installation, character of equipment and current consumed and the increase of display advertisement by gas or electricity. The general adoption of rates as proposed by him would, he said, go far towards promoting the use of gas and electricity for fuel.

Mr. Robins, of the Robins Belt Conveying Company, was present at this instructive lecture, and the committee expects at a later date that he will describe to us new methods of transporting material in bulk. Mr. McAdoo, of Hudson Tunnel fame, will also probably talk to us at a future time.

At the smoker of November 22 Mr. Binney, our president, referred to the progress of our club, our recent installation of a steam heating plant and the growth of our membership, which indicated, he thought, that we would shortly be able to afford increased club conveniences, including provision for "spiritual refreshment," if the members so desired (applause), and that, to add to general interest, he offered a cup as a prize in a pool and billiard tournament shortly to be commenced (renewed applause).

In addition to this promising program, we are looking forward with much anticipation to our annual banquet on February 5. President Maclaurin will be with us and the M. I. T. Musical Clubs will give a concert between courses.

It is increasingly difficult for the secretary to state the many interesting events here. Moreover, he is troubled with conflicting emotions, for, although he wishes all Tech men to know all about us, he is reluctant to encroach upon the space of the REVIEW, the value

of which he can vouch for from the rush of inquiries and applications for membership received from men as far away as Panama, whenever it kindly mentions our club.—*William H. King, Secretary, 17 Gramercy Park, New York city.*

WASHINGTON SOCIETY OF THE M. I. T.—The annual meeting of the society was held at the University Club, Dec. 6, 1909, preceded by an informal dinner in the private dining-room of the club.

Reports from the secretary, treasurer and entertainment committee were read, all showing a greatly increased activity on the part of the society during the past year over previous years, and consequent increase in attendance and enthusiasm. Forty-eight gatherings of all sorts, not including committee meetings, were held, at the largest of which, the annual banquet, there were sixty-seven present. The total number of Technology men appearing on the list of the society as located in the vicinity of Washington is 235, of which number 157 are in the city, the remainder being scattered through Maryland and Virginia, including Baltimore, Annapolis, Norfolk and Newport News. One hundred and twelve of these are enrolled as active members of the society.

The question as to the character of the annual banquet this year was warmly discussed, there being considerable sentiment in favor of a smoker instead of a formal banquet, but it was finally decided to continue the custom of former years and hold a genuine banquet about midwinter. The suggestion of the Pittsburg society in the October REVIEW that Washington, Chicago, Buffalo and Pittsburg co-operate in financing a trip by a representative of the Institute, similar to that undertaken by Dr. Maclaurin and Mr. Litchfield last February, was received with favor, and immediately seconded on the part of the Washington society with the suggestion that the Philadelphia and Cleveland clubs be included in the arrangement.

The following officers were elected for the ensuing year: president, Charles F. Willard ('01); vice-president, H. N. Parker ('94); secretary, A. M. Holcombe ('04); treasurer, F. E. Fowle, Jr. ('94); member of the executive committee, R. B. Sosman ('04); representative on the Alumni Council, I. W. Litchfield ('85). A. C. Willard ('04) was appointed chairman of the committee in charge

of the annual banquet.—*A. M. Holcombe, Secretary, Room 350, Patent Office.*

TECHNOLOGY ASSOCIATION OF NORTHERN CALIFORNIA.—At the annual meeting in May W. E. Leland ('91), Merchants' Exchange Building, San Francisco, was elected president for the present year. George E. Atkins ('04), same address; Burton G. Philbrick ('02), 1014 Broadway, Oakland; Fred J. Fraser ('05), 653 Melville Avenue, Palo Alto, were elected members of the executive committee, the present secretary-treasurer still having two more years to serve.

The dinner was held at the Fairmont Hotel, and twenty-five were present. It was a very successful evening, and every one thoroughly enjoyed both the dinner and the program.

During the summer two very interesting meetings were held, one a fishing trip and dinner, which was mostly dinner, and all of the seventeen present were more than pleased with the day. We had one of San Francisco's gasoline tug launches, and spent a good part of the morning looking for fish, and then finally went to dinner on the beach. Afterward we headed for the Golden Gate, and, after getting thoroughly wet from the spray, turned home, happy, though fishless. This was followed by a camping trip through Marin County and an all-night stop at Bolivas Bay, tramping back the next day through the Muir Woods. Early in September we held our second ladies' evening, this time a bowling party and supper at Jefferson Square alleys, San Francisco. There were eighteen present, and, although none of the scores were high, they were all close enough to make things interesting.

The next meeting was the first semi-annual dinner held at the Old Poodle Dog Restaurant in San Francisco the last of November. Twenty-two were present. Everything was informal, and, although a pianist was lacking, Kriegsman ('05) made up for the lack, and the favorite songs and cheers were heard often.—*H. C. Blake, San Rafael.*

THE M. I. T. CLUB OF CENTRAL NEW YORK.—At the recent annual meeting of the club the following officers were elected for

the ensuing year: president, James P. Barnes ('05); vice-president, Irving S. Merrell ('96); secretary, Harry N. Burhans ('07); executive committee, president, vice-president, secretary, Harry W. Jordan ('91), Walter E. Hopton ('91).

It is the determination of the executive committee to wage a vigorous local campaign in the interests of Technology, and thus excite more general interest in the Institute throughout the central part of the state. This locality is very strongly influenced by local universities, but it is the intention of the committee to get into personal touch with the best type of students and give them full information about the Institute.

TECHNOLOGY CLUB OF PHILADELPHIA.—The first informal dinner and meeting of the Technology Club of Philadelphia was held on Saturday evening, October 9, at Hanscom's. Mr. E. Sherman Chase ('06), chemist in charge of the Reading Purification Works, gave an interesting talk on sewage purification.

It is expected that informal dinners will be held on the second Saturday of each month during the winter and spring.

The club held its second dinner for the season on Saturday, November 13. There were twenty-four present. The guest of the evening was Professor H. V. Gummere, of Drexel Institute. All readers of *THE TECHNOLOGY REVIEW* will recall the article in the January, 1908, number describing the Technology expedition to the Aleutian Islands. Professor Gummere was a member of that expedition as magnetician and astronomer. His description of the trip was intensely interesting, and he had a store of personal anecdotes and incidents, some laughable and some serious. We were fortunate indeed to have also an opportunity to examine a number of articles of basketry work which Professor Gummere had secured on the islands, the natives being acknowledged the finest basketry weavers in the world. One article was a belt of intricate design woven from grasses, with a row of tiny flowers interwoven in colored silk in such a manner that the silk appeared on one side. There were but two things to regret: one was that the evening was all too short, the other that our secretary, who had done so much to make the evening a success, was unable to be with us, having been called out of the city by business.

Not long since a challenge from the Washington Society came for a triangular bowling meet between Baltimore, Washington and Philadelphia. This challenge was promptly accepted by the Philadelphia club, and some very industrious practising is going on. The bowling nights are growing in popularity, and quite a little rivalry is springing up among members of the home team. All men interested in bowling should communicate with the secretary, so that he can notify them of the time and place where the bowling parties meet.—*Percy E. Tillson, Secretary, 436 Y. M. C. A., Philadelphia.*

TECHNOLOGY CLUB OF VALARDENA, DURANGO, MEXICO.—Probably the most brilliant social event in Valardena was the dance given by the Technology Club last Saturday night in the "Foreign Club." The seven graduates of the Massachusetts Institute of Technology who reside there decided to give a dance in honor of their school, and wanted it to be a good one. They sent to Boston for a seal, which was beautifully engraved on the invitations and programs. The club was specially decorated for the occasion with banners, bunting, and flowers, and the big electric sign "Tech" at one end of the hall was a great surprise, and great enthusiasm was aroused when the shout of school yells started. The dancing continued until 4.30, when the well-satisfied but tired guests left the club. The banners which were used for decorating purposes were given to the ladies who were present, and they are now to be seen in many houses in Valardena.—*Mexican Herald, Nov. 18, 1909.*

THE TECHNOLOGY CLUB OF BUFFALO.—The Technology Club of Buffalo held its fall meeting at the University Club. This was one of the best meetings ever held here, about thirty men being present, and much interest was shown in matters pertaining to the Institute. The question of entertaining the Glee Club was thoroughly discussed, and a committee appointed to take charge of this and report at the next meeting, which will be held on Tuesday, January 11. It was also decided to hold monthly meetings during the season on the second Monday of each month, also weekly meetings at some down-town café at 1 P.M. every Tuesday. These are

all informal, and all Tech men are welcome. Important matters will be discussed at the next monthly meeting, and election of officers will be held. We have an increasing membership, the club is in a very prosperous condition, and hope that some of the faculty who come this way will not forget us, and when we have our meetings.—*Henry A. Boyd, Secretary, Erie County Bank Building, Buffalo, N.Y.*

TECHNOLOGY CLUB OF NEW BEDFORD.—The annual meeting of the Technology Club of New Bedford was held on the evening of November 4 at the Dartmouth Club. There were fourteen members present, and the following officers were elected for the coming year: Albert R. Peirce, president; Charles F. Wing, Jr., secretary and treasurer; George K. Nye, member of executive committee. It was voted to hold the annual dinner January 14, and the officers, with Messrs. Lawton, Wade and Braley, were appointed a dinner committee to arrange for the dinner and speakers. We are glad to announce that President Maclaurin will be our guest on that occasion. While lunch was being served, retiring President Hathaway entertained the members with grand opera records on his talking machine.

There are several new Tech men in town this winter, and we expect an enthusiastic and prosperous year.—*Charles F. Wing, Jr., Secretary.*

TECHNOLOGY CLUB OF SOUTHERN CALIFORNIA.—The annual meeting and banquet of the Technology Club of Southern California was held at Hotel Lankershim on Saturday evening, Dec. 4, 1909.

The following officers were elected for the ensuing year: James W. Johnson, '82, president; Edward L. Mayberry, '06, vice-president; and L. A. Parker, '06, secretary and treasurer.

After our routine business the first speaker of the evening was Mr. A. F. Rosenheim, whose subject was "Architecture of Los Angeles for the Future." He brought out in his remarks the reasons for the continued advance toward a better class of construction, and how it is being brought about through the co-operation of the local Chapter of the American Institute of Architects and the City Building Department.

Mr. H. M. Blaisdell gave a most interesting talk on the advances which have been made in the filtration of water for municipal purposes. He described at length the work being done in Philadelphia, in Yuma, Ariz., Wilmington, Del., and by the New York Board of Water Supply.

The evening's entertainment closed with a few remarks by Mr. C. S. Green on "Domestic Architecture" and by Captain Osgood on "The Success of Inventions."—*L. A. Parker, Secretary, 764 Pacific Electric Building, Los Angeles, Cal.*

Program for the Society of Arts

The Society of Arts has held two meetings, one on December 6, which was addressed by Dr. William T. Sedgwick on "The Sanitary Disposal of City Wastes," and another by Professor William H. Pickering, of Harvard College Observatory, December 16, on "The Moon as a Living Planet."

Among the other lecturers who have consented to speak before the society the coming season are: Professor Henry P. Talbot on some topic connected with the chemistry of every-day life; Professor Charles R. Cross on "The Experimental Evidence on which Modern Views of the Nature of Electricity are Based"; Dr. Harvey W. Wiley, chemist of the Department of Agriculture, Washington, D.C., who will describe the operation of the pure food laws; Professor Thomas A. Jaggar, Jr., who will give an illustrated lecture on "Japanese Volcanoes. Two or three lectures remain unannounced.

The membership in the society has increased about ten per cent. up to date this season. The total increase last year was 15 per cent.

AMONG THE UNDERGRADUATES

Student Interests on a Good Footing—Raising the Standard of Cross-country Work—Basket-ball and Hockey

The Institute committee, which was practically established on a solid basis as the undergraduate legislature last year, has made no particular advances thus far, but is apparently adjusting and carrying out the point system established a year ago, exercising proper surveillance over bulletin boards, etc. Last year the Institute committee, assisted by some of the alumni, established a clerical office for the undergraduates, where, it was hoped, the books of all the student activities might be kept. As a rule, these are notoriously inaccurate, and because of this fact some interests wind up in a bad mess financially too frequently. Inasmuch, however, as the Institute committee has no income except small amounts contributed by the four classes, and as it has not been able to convince the various activities of the benefits of direct co-operation, this enterprise has been temporarily abandoned.

The Tech, which started out this year as a daily, has steadily improved, and seems to be on an even keel. The organization, which comprises nearly sixty men, is very complete, but the reportorial department has been somewhat handicapped because the editorial board is made up largely of inexperienced men. The special issues of *The Tech*, devoted to separate courses, are very creditable indeed, and every alumnus should at least secure the issue relating to his own course, which can be had for six cents in stamps.

The book selected for the Tech Show was written by Edwin C. Vose ('11) and Clarence A. Stewart ('12), and is said to possess a great deal of merit. It is entitled "The Queen of the Cannibal Islands." The management of the Show is in very competent hands, and James R. Francis has been secured as coach for another

year. The play, which will be given during Junior Week, has become an important social event in Boston.

The *Technique* has made a business-like start, and it is believed that the coming volume will be an improvement on last year.

The formation of an aëro club, referred to elsewhere, has called much attention to the practical work that undergraduates are doing outside of the regular curriculum. In this connection it may be said that the course societies possess in themselves a tremendous educational value and are becoming of great importance in Institute life. They are growing stronger and better every year.

The wireless society has now a fully equipped office, and its members are gaining excellent experience in the practical side of the art.

It is especially encouraging to note the remarkable advance of the musical clubs, both in merit and interest. The coming tour of the clubs will give the alumni in the various cities they visit an opportunity to hear by far the best musical organization that Technology has ever had.

Perhaps the greatest improvement that is to be noted is that in the department of athletics. It was very gratifying to have the team take second place, next to Cornell, in the intercollegiate cross country race, November 20, after having defeated Harvard, November 5, in the first of a series of five yearly contests. The score in the Tech-Harvard race was: Technology, 27; Harvard, 62. In the intercollegiates the scores were: Cornell, 22; Technology, 88; Michigan, 112; Yale, 114; Dartmouth, which took part for the first time, 123; Syracuse, 143; Harvard, 153; Pennsylvania, 183; Columbia, 227; and Princeton, 234.

The freshmen were victorious over the sophomores in the Field Day events by a score of 6 to 3. They won the football game and the tug-of-war, the relay race going to 1912. It will be remembered that the freshmen also won a year ago. There was a large attendance of undergraduates and but few alumni. It is a fact that these Field Day contests are almost as exciting as the big games at the Stadium, and it is hoped that next year a number of alumni class parties will be arranged to see the event.

The basket-ball team, which was very successful last year, has started out with one of the severest schedules it has ever had. There have been no losses by graduation, and the outlook for a satisfactory season is very promising. The schedule is as follows: January 5, Tufts at Medford; January 8, Lowell Textile at Tech Gym.; January 11, Dartmouth at Hanover; January 15, Brown at Providence; January 19, Williams at Williamstown; February 1, open to any western New York team; February 2, Niagara University at Niagara; February 4, Conesus College at Conesus, N.Y.; February 5, Rochester University at Rochester; February 9, Tufts at Tech Gym.; February 12, open; February 16, Brown at Providence; February 19, Rhode Island State College at Providence; February 24, Lowell Textile at Lowell; February 26, University of Maine at Tech Gym.

The hockey team has lost one or two of its crack members, but these losses have been offset by the addition of Stuckland, the crack Dartmouth player of last year's Hanover team, and other good material. The hockey schedule is as follows: December 24, Crescents at Boston; January 1, Dartmouth at Boston; January 5, Harvard at the Stadium; January 8, Brae-Burn Country Club at Brae-Burn; January 15, Andover at Andover; January 21, Amherst at Boston Arena; January 29, Brown at Boston Arena; February 2, Yale at New Haven; February 3, Columbia at St. Nicholas Rink, New York city; February 4, Princeton at St. Nicholas Rink, New York city; February 5, West Point, at West Point

Negotiations have recently been completed between Technology and Cornell for a dual cross-country race to be held next fall over the Ithaca course. Cornell will lose by graduation ten of the fifteen men of the victorious squad this year, while Tech loses but one man, Captain Jacobs, who finished nineteenth in the intercollegiate race.

At the inauguration of President Shanklin, the new head of Wesleyan University, President Maclaurin received the degree of Doctor of Laws.

TECH MEN IN THE PUBLIC EYE

FREDERICK H. NEWELL ('85). The recent criticism of a New York newspaper on the Reclamation Service was immediately answered by some of the engineering papers, notably the *Engineering News*, which took occasion to speak of the debt the engineering profession and the country owe to Mr. Newell, who conceived and carried out the enterprise.

Frederick Haynes Newell was born in Bradford, Pa., March 5, 1862. He was graduated from the mining engineering course of the Massachusetts Institute of Technology in 1885, and later took a post-graduate course in hydraulic work. Immediately after completing his course, Mr. Newell took up his profession in Colorado as mining engineer. In this state he came in contact for the first time with irrigation on a large scale. His interest in the possibilities it held led him to accept the position of assistant hydraulic engineer in the United States Geological Survey in 1888.

It was then that he began the intimate acquaintance with the watersheds of the West, the flow of rivers and the topography of the country with which he has achieved such a wide familiarity.

Very early in his career he foresaw the potential value of the Great American Desert, and from the beginning shaped his work along lines which would make the reclamation of vast areas possible. During the fourteen years in which he served the United States Geological Survey as assistant hydraulic engineer, topographer and hydrographer, he collected and made available for public use a vast amount of valuable and important data which has proven of tremendous value in the irrigation development now going on in the West.

For a number of years Mr. Newell carried on this work nearly alone and with only faint recognition from Congress. Its importance to the future growth of the West gradually impressed itself

upon the law-makers, resulting in larger appropriations, which permitted the extension of the work along broader lines.

The data collected in previous years enabled the newly created Reclamation Service to take up without delay several of its largest irrigation projects. So thoroughly had this preparatory work been done that three years from the day upon which the Reclamation Act became a law the first unit of the Truckee-Carson project in Nevada was thrown open to the public. The waters of Truckee River were carried for many miles in a cement-lined canal into the drainage basin of Carson River, and poured upon one of the most desolate deserts in the world,—the Forty-mile Desert,—the terror of the early gold-seekers, whose trail was marked with the whitening bones of those who perished of thirst in their rush to the gold fields of California.

In the meantime half a dozen other large projects had been undertaken, practically every one of which required engineering skill and executive ability of the highest order. Since that time one or more projects in each of the arid states has been taken up, until there are now thirty-two government projects completed or in course of construction.

Mr. Newell's enthusiastic devotion, his close personal acquaintance with every detail of the work and his prompt recognition of efficiency have resulted in such an *esprit de corps* as is very rare in public work.

WILLIS R. WHITNEY ('90), during the past year president of the American Chemical Society, at its recent annual meeting in Boston delivered the presidential address, taking as his subject "The Chemistry of Electric Lighting." To the development in this country of both incandescent and arc lighting the researches of Dr. Whitney and his associates have greatly contributed. For the study of this and other electrochemical problems the General Electric Company established at Schenectady in 1902 a research laboratory, and appointed as its director Dr. Whitney, who was then Assistant Professor of Theoretical Chemistry at the Institute. Under his leadership that laboratory has steadily grown in size and impor-

tance, and it has at the present time a staff of about forty chemists and engineers who are devoting themselves entirely to the scientific investigation of technical electrical problems. Dr. Whitney was born in Jamestown, N.Y., in 1868, and received his early education in the schools of that city. He entered the Institute in 1886, and graduated from it four years later in the Course in Chemistry. He was immediately appointed to its instructing staff, and, except for two years spent in study in Leipsic and in Paris, was continuously connected with it until he resigned to assume the direction of the Schenectady laboratory. During that period he showed himself to be an able investigator, an original and inspiring teacher and a devoted friend to his students and fellow-teachers.

ARTHUR W. DEAN ('92), state engineer of New Hampshire since 1904, and formerly engineer of the New Hampshire Traction Company, has been appointed secretary of the Massachusetts Highway Commission, succeeding Mr. Austin B. Fletcher, resigned. Mr. Dean was born in Taunton, Mass., and was graduated from the Massachusetts Institute of Technology in 1892.

RICHARD E. SCHMIDT ('87), has just been elected vice-president of the German Hospital in Chicago. Mr. Schmidt, who is the architect of many notable buildings in Chicago, is a member of the Chicago Architectural Club, the American Institute of Architects, and is a director in the Chicago Historical Society.

Meeting of the American Association

The American Association for the Advancement of Science just completed its sixty-first meeting, which was held in Boston at the invitation of Technology and Harvard University. On account of the central location of the Institute, the greater part of the meetings were held in the Institute buildings. Dr. Harry W. Tyler was chairman of the local executive committee.

NEWS FROM THE DEPARTMENTS

New Physical Apparatus—Increased Service of the Electrical Engineering Department—Changes in Course Scheme of Mining Engineering Department

DEPARTMENT OF PHYSICS.—During the past summer, in addition to much miscellaneous apparatus, the department has procured two valuable optical instruments, a Brace Spectrophotometer and a Martens Polarization Photometer for the study of absorption. These last have been purchased from the income of the bequest of Mrs. Augustus Lowell, which has been devoted to the purchase of permanently valuable pieces of physical apparatus. The complete list of these which follows will show how great is the indebtedness of the Rogers Laboratory to this fund:—

1896. Cathetometer with two Telescopes, Société Gènevoise, Geneva.

1898. Automatic Air-pump, E. S. Ritchie & Sons, Brookline.

1899. Koenig Spectrophotometer, Schmidt & Haensch, Berlin.

1899. Michelson Interferometer, Gaertner, Chicago.

1900. Landolt-Lippich Polariscopes, Schmidt & Haensch, Berlin.

1904. Littrow Spectroscope, Michelson's pattern, Gaertner, Chicago.

1904. Weston Lecture-room Ammeter and Voltmeter, Weston Electrical Instrument Company, Newark.

1906. Ultra-violet Microscope, Zeiss Company, Jena.

1908. Abbé Crystal Refractometer, Zeiss Company, Jena.

1909. Brace Spectrophotometer, Schmidt & Haensch, Berlin.

1909. Martens Polarization Photometer, Schmidt & Haensch, Berlin.

ELECTRICAL ENGINEERING DEPARTMENT.—As heretofore noted in THE TECHNOLOGY REVIEW, Dr. Harold Pender, a graduate of Johns Hopkins University, and distinguished in science and engineer-

ing, was appointed to the professorship vacated by Professor Clifford when he went to Harvard University; and Mr. W. E. Wickenden, a graduate of Denison University, was appointed Assistant Professor to take up the work of Associate Professor Shaad when he went to the University of Kansas to become the head of the Electrical Engineering Department of that institution.

The duties of Professor Pender in the department include the direction of the important undergraduate course in the elements of electrical engineering which are provided in the curricula of the third-year students in electrical engineering and electro-chemistry and the naval constructors, and which is at the foundation of all our electrical instruction in electrical engineering. Professor Pender's duties also include advanced lectures on alternating currents and the problems of the electrical transmission of power for graduate students, and the direction of investigation and research carried on by advanced students. Dr. Pender's enthusiasm in these important duties makes his presence on the staff a decided force and strength.

Professor Wickenden's duties include instruction of the fourth-year men in professional studies like central station operation and management, electric railways and technical reports. He also has charge of some instruction in electrical engineering for naval constructors, and the instruction of graduate students in the design of generating stations and distribution systems. Professor Wickenden has been giving special attention to instruction relating to technical reports, and it is believed that unusually admirable results are coming from the co-operation of the English Department with the Electrical Engineering Department in this connection. A particular effort is being made to train the students in the logical analysis and the orderly written presentation of the problems of a project, while the presentation is at the same time couched in appropriate and pleasing language.

Professor Harrison W. Smith, who was on leave of absence for the second term of last year, spent the time in a trip around the world, and returned to the Institute at the opening of this year. Sailing from San Francisco Feb. 2, 1909, he touched at various

Pacific ports on his way to the Island of Java. He collected specimens and made photographs, giving particular attention to such collections during a somewhat extended stay in Java. Returning to this country, he arrived in New York city in the latter part of September, bringing scientific specimens and an extended collection of photographic negatives. The specimens have been put into the hands of the several scientists interested, and Professor Smith is now engaged in putting the negatives into systematic order for publication or similar use. Professor Smith's duties in the department now principally relate to the instruction in electrical engineering of the students of Courses I., II., and III. The recent changes of the curricula of these courses have provided for an increase of the electrical engineering instruction given their students, and Professor Smith has particular charge of the further development of that work.

The department staff now consists of two Professors, three Associate Professors, one Assistant Professor, five Instructors and four Assistants.

The policy of the department is to do the work for the Course VI. students as thoroughly and wisely as the staff knows how, and to also undertake instruction of students in other courses whenever the curricula of those courses provide the opportunity. The changes that have been made in the several other courses within the last two years have consequently imposed on the department, and especially on the laboratories of the department, responsibility for the instruction of a considerably larger number of students than ever before. In association with the increasing number of students in the upper classes of Course VI., it is estimated that these conditions in another year will require us to take care in our laboratories of twice as many student-hours of instruction as were imposed on the same laboratories three years ago. The increased instruction which the department is giving to students of other departments seems a matter of real importance to the welfare of the Institute, as the uses of electrical power are invading nearly every branch of industry and all engineers should have laboratory instruction in electrical science.

The undergraduate and graduate instruction given by the department is steadily increasing. The number of students is increasing in both the undergraduate and graduate work. The improved curriculum provided by the Faculty two years ago went into effect with the third-year class in the fall of 1908, and is now also in use with the fourth-year class. It is believed that this curriculum gives a well-balanced electrical engineering course, though there are some modifications still to be made, particularly some required to bring the elementary laboratory work into an earlier part of the course, at least advancing it as far as the opening of the third year.

It is significant that 40 per cent. of the men who graduated from Course VI. last June had previously received college degrees and had thereafter spent from one to three years in electrical engineering studies at the Institute. It is also of significance that 16 per cent. of the men who graduated from Course VI. last June became teachers of electrical engineering or physics, notwithstanding the fact that there were plenty of commercial opportunities to absorb all of the men of ability. It is believed in the department to be an admirable ideal for young men to enter the field of teaching, and that the department may justly cultivate such an ambition amongst its best students without lessening its direct influence on industrial affairs.

Some distinct improvements have been made in the laboratory department during the last couple of years, but the department still has crying needs. The most important of these needs is adequate funds for the stimulation of research, which ought to be provided by special endowment.

DEPARTMENT OF MINING ENGINEERING.—The mining laboratory work is being carried out this year along much the same lines as in the past. Three stamp-mill runs on Nova Scotia gold, three concentrating runs on Missouri lead ore and three other runs on various small concentrating machines have been made. The blast-furnace runs, roasting runs, zinc desilverization work, pan amalgamation tests, have all been finished, and there remain the metallographical work and also the finishing of the individual cyanide and chlorination tests. The third-year class in assaying

this year has the advantages of a lecture hour every week. The present assaying class suffers severely owing to the work of the calendar committee which arranges vacations. One section, which spends Fridays in the laboratory, nets only thirteen weeks of assay work instead of the fifteen weeks that they are supposed to get. This loss is due to the fact that the fall Field Day came on Friday, and to the extension of the Christmas vacation to include two Fridays.

Professor George J. Young, of the University of Nevada at Reno, Nev., paid a visit to the Institute in November, and made a careful study of its methods. He is visiting various other institutions, and he proposes to study foreign schools before his return to Nevada next year.

Professor Katsura, of the University of Tokio, Japan, who has spent some time in Europe and the past summer in the United States, visiting metallurgical plants, is now back at the Institute, taking special courses along metallurgical lines. He specially studies our methods of teaching, and reports that he considers them to be among the best he has observed.

Mr. J. A. Grant comes to us this year to make a special study of coal-mine explosions, dealing particularly with the effect of dust as a cause of explosions. Mr. Grant is a college graduate, and for the past few years has been engaged in practical coal mines at San Coulée, Mont.

The new course scheme adopted last year is in full effect this year for the second-year men, and practically in full effect for the third-year men. Only the fourth-year men are working under the old scheme. As far as can be judged at present, the new scheme is going to be a great improvement over the old. Under the new scheme the men finish their chemistry and their applied mechanics at the end of the third year. They begin their physical laboratory in the second term of the second year. One year of language has been dropped, and time has been gained for additional English and European history, for courses in sanitary science, electrical engineering laboratory, and forging. Increased time is given to assaying and hydraulics. Options I. and III.—namely, the gen-

eral option and the geological option—are identical up to the end of the third year, and in the fourth year option III. pursues specialized geological work, so that it is expected that in the future only students will take option III. who specially desire to follow the geological side of mining.

Mr. Arthur P. Watt, of the class of '06, has returned to the Institute this year to act as private assistant to Professor Richards, and is carrying out an investigation on quartz and galena under hindered settling conditions. Mr. Watt since his graduation has served as assistant in the Mining Department, and has had extensive experience in the large mills of Utah and Nevada. Messrs. George A. Barnaby and R. C. Thayer remain as private assistants to Professor Richards. Messrs. E. S. Bardwell and E. G. Goodwin, who have been engaged in book work on ore dressing, which appeared this fall, have now left the Institute, the former to take the superintendency of a garnet property in New Hampshire and the latter to go into commercial work.

Interesting work has been done by the class in the fourth-year laboratory in studying the action of the Richards pulsator jig upon New England coal. One day a lot from Mansfield, Mass., was run, and on another day a lot from Cranston, R.I. A special investigation has also been made upon the application of this jig to the recovery of carbon from city ashes. The development of this jig reached such a point that a trip to Denver by Professor Richards was made necessary. He left Boston on Saturday, November 27, and returned on Friday, December 10. There appears to be a definite call for this jig in connection with coal washing, and this was one of the questions which was to be solved by the western trip.

DEPARTMENT OF MODERN LANGUAGES.—Another reduction has taken place in the work in modern languages that is required for the attainment of a degree. Spanish has been dropped from the course of naval architecture for naval constructors, and French or German (at the option of the student) from the courses of mining and of architecture. In only six of the fourteen courses are students now required to qualify both in intermediate French and in inter-

mediate German. These courses are biology, physics, chemistry, chemical engineering, geology and electro-chemistry.

For the first time probably in the history of the Institute the average section in modern languages numbers less than fifteen students. The closer contact between instructor and student which results from this reduction of the size of the sections is bearing fruit, especially in the form of greater oral command and aural appreciation of the languages.

A course of fifteen lectures on "The Problems and Development of Gothic Architecture" is given by Mr. Dike, of the Department of Modern Languages. This course is given in French, and is attended principally by students of architecture, for whom it is specially intended.

Class News an Interesting Feature.

The great interest that the younger classes take in Technology is emphasized by the amount of class news sent in by the secretaries. In this issue of the REVIEW the last twenty-three classes are represented without a break. Some of the classes in the 80's are losing something they ought to get, while the 70's come to the front nobly. The Class of '68 is nearly always represented.

It will be well worth the reader's while to turn to the '96 class news, and read what Porter ('96) has to say in reference to Dr. Cook's claim to have discovered the pole. Mr. Porter was topographer for the Mt. McKinley expedition, and was with Dr. Cook in the field. An entertaining sketch of Henry Morss' trip around the world is given in the '93 news, and Collins, secretary of '97, tells of the success Ewen of his class is making with his new process of making ethyl alcohol out of sawdust.

There is always a lot of interesting material in the class news.

SCIENCE AND EDUCATION

Dr. Maclaurin talks on the Influence of the Progressive and Scientific Ideas of Education

We print the following address delivered by President Maclaurin at the annual meeting of the New England Association of Colleges and Preparatory Schools, because of its broad analysis of a subject so often treated at a narrow angle. It will be illuminating to the general reader as well as to the alumnus, and will bring profound satisfaction to that little band of early friends who have lived to see the complete fruition of the great idea conceived by President Rogers, and consistently unfolded by his devoted successors:

In selecting a subject for discussion this evening, I have borne in mind the fact that I have to address a body of men of much riper judgment than myself and with a far more intimate experience of educational affairs in this community. I have not had time nor opportunity to gain a sound first-hand knowledge of New England. I have therefore decided to speak of matters that have no special local significance, but are true of nearly the whole of western civilization. Asked a few days ago to give a title to my address, I answered on the spur of the moment, "Science and Education." That is comprehensive enough for anything. What I really wish to talk about is the influence of the progress of scientific ideas on education.

None of us needs to be reminded that the last century has been pre-eminently the century of the science of nature. We hear so much of this that we are apt to slip into the absurd error of supposing that there was practically no science before the nineteenth century. Most certainly there were giants of old; and it is merely because we are standing on their shoulders that we can see so much farther than could they. It is in the popular appreciation of science rather

than in science itself that the last century has proved absolutely revolutionary. Before that science was a thing for the very few, and its importance was quite unrecognized except by those few. Now, on the other hand, its merits are loudly proclaimed on every hand, and its importance emphasized, with tiresome repetition, by college presidents and others, often, indeed, by men who have little real knowledge of its methods and little real sympathy with its progress. That is, however, beside the mark; for the change in attitude towards science is unquestioned and unquestionable. From this point of view it is quite true to speak of all the ages before the nineteenth century of our era as prescientific, and of that century as forming the Great Divide between the old world and the new.

This revolution in public opinion has been brought about, not so much by scientific discoveries themselves as by the applications of these discoveries. Faraday's brilliant electrical researches would doubtless have delighted a select few; but his worshippers would not have been numerous, had he not disclosed a new empire over which his less profound fellows might easily exercise sway. Man rules Nature by obeying her; and he must first discover her laws before he can have any real dominion over her. So it was that Faraday's researches brought about ere long the invention of dynamo; and similar discoveries by other men of science led in due time—as every school-boy knows—to a series of inventions of all kinds that have completely changed the conditions of our daily life. Just pass through your mind a few of these changes,—changes in the means of production,—the establishment of factories, the consequent growth of great cities; changes in the means of communication by land and sea and air and ether; changes in the methods of dealing with the problems of health, public and private. It is surely a very short-sighted view that sees in such things only a change in material conditions. An immense change in mental and spiritual outlook is really consequent thereon. I am not now thinking of the other well-known fact that these methods of science proved so strikingly successful in their own domain that they were applied to other branches of knowledge and led to changes that

profoundly affected man's outlook on life and his attitude towards the deepest and most engrossing problems of his nature and his destiny.

Of course, so mighty and revolutionary a movement could not but affect education. It has done so profoundly; and we might well divide the history of education for the last century into three periods, during each of which some one of the great movements of scientific opinion just referred to has been specially prominent. In these three periods, science has successively affected our views as to (first) the content, (second) the method, and (third) the aim of education.

In the prescientific days there was scarcely such a thing as *popular* education. Indeed, science is almost wholly responsible for the improved social conditions that have made the education of nearly all the youth of the country possible. Apart from this, however, in the earlier days there were few forces making for popular education except the influence of Calvinism. The exception is, of course, especially interesting to New England, where Calvinism was so long dominant. Under its régime, education was strictly individualistic at the core: each individual was ultimately responsible for his religious belief. All that the state did was to see that each householder had his children taught to read, so that the Scriptures might be open to them. So much for *popular* education. As to *higher* education, this was entirely under the influence of the classical tradition. The dominating idea in anything that was good here was the idea of culture, which is also individualistic at the heart. Science, in so far as it was pursued at all, was followed chiefly to satisfy the intellectual cravings of a leisured class and without any idea of public service.

The "educational revival" that marked the transition from the prescientific to the scientific era was due to the great social changes brought about by the applications of science to industry. These changes slowly, but surely, undermined the older extreme individualistic theories. Under the new conditions the mutual interdependence of different men and different classes became so obvious that it could not be ignored. Hence the demand for popular education became irresistible; and it was seen to be a necessity to

educate the working classes to enable them to cope successfully with the new conditions. From this time, education ceased to be the privilege of a few and came to be regarded almost as the birth-right of all.

As regards higher education in this period, the main battle was fought over the *content* of education. Except for occasional attacks from the champions of modern literature, the upholders of the strictly classical tradition had been in undisturbed possession of the field for centuries. Now, however, arose a small army to press the claims of science,—such men, to mention only a few Englishmen, as Herbert Spencer, Charles Kingsley, and Huxley, men who saw clearly that science was revolutionizing the world and that it was monstrous in the education of young men to treat them as if nothing had happened since the days of Plato and Aristotle. They believed, too, that the study of natural science—properly conducted—was better suited than any other study to produce in the student just the right *habit of mind* to enable him to cope intelligently and effectively with the difficult problems of modern life. In the war that followed the promulgation of these ideas there was set up an unfortunate antithesis between science and humanism, an antithesis that we now see to be needless and wholly misleading. Some educators are not yet converted from the errors of this period, but their conversion can only be a question of time. It was during this period that there began that movement which is proving itself of greater importance than any other as a condition of progress,—I mean the rescue of the sciences from mere culture and intellectualism and the harnessing of them to clearly conceived human purposes. In the field of education this movement gave rise to the establishment of schools of technology, beginning in France, following quickly to Germany, and more slowly later to this country, to England, and the greater part of the civilized world.

The period to which I have just referred was one in which the main influence of science on education was directed to its content; but this led naturally and inevitably to a new era in which the *method* of teaching was emphasized. What we now know familiarly as the method of the laboratory constitutes perhaps the most striking

peculiarity of scientific training. Its essence is the bringing of the mind directly in contact with fact and practising it in drawing conclusions from premises surely established by immediate observation. I need scarcely remind you that the influence of this method has spread far beyond the field in which it was originally planted. It has made it a commonplace that sense-perception and practical work should be utilized at every stage of education where this is practicable. It has given a new significance to the study of the mode of development of the growing boy and girl and has breathed a new spirit into psychology. This in turn has emphasized the importance of the physical side of education and made it unquestionable that a sound body is the proper basis of a sound mind and of sound morals. It has exposed the fallacy of leaving the conduct of the earlier stages of education in the hands of the inexperienced and has proved that these early stages are peculiarly critical. It has made evident the need of adapting the mode of instruction to the stage of development of the child instead of employing the same method throughout, and has contributed numberless suggestions as to the most effective means of dealing with the difficult problems that are presented at each stage of the process. In short, all the improvements in educational methods which characterize these latter days, and with which you are, of course, thoroughly conversant, are due directly or indirectly to the influence of science.

The last great influence of science to which I need refer tonight is one that is rapidly gaining in power, and one that, when thoroughly dominant, will bring about a new epoch in the history of education. It has been heard of for years, and some of you may think that it is already in undisputed possession of the field. I wish it were so, but have my doubts. It deals with the *aim* of education, and, going thus to the root of the matter, must radically affect our views as to both the content and the method of education. I have already reminded you of the influence of science in undermining the foundation of the extreme individualistic theories of society, but there have been other factors in that influence than the one to which I have referred. The somewhat misleading analogy between an organism and the state has been potent in helping the movement,

and has made the idea of a scientifically organized national existence much more than a dream. The movement has gained strength with each advance, and the wonderful improvements that science has effected in the machinery of social life have helped to bring home to great numbers of thinking people the fact that most of the problems of social betterment are primarily scientific problems, to be solved by application of the principles learnt in the pursuit of natural science. And so we find that today science has become much more ambitious than of old. It claims the whole world for its parish, and, so far from contenting itself with work in the laboratory, it goes out into the market-place and into public life, and seeks to make its influence predominant in the world of business and of government. This emphasis on the social aspect of science and scientific training is thought of by some as another blow to individualism. It is, however, a vastly different thing from crude socialism. It merely states implicitly that the individual is not able to make the best of his life by his unaided efforts, and urges a serious and organized effort to attack the complex problems of modern society in a scientific spirit and in the light of the best scientific knowledge. It holds up social effectiveness, power to serve the community, as the end of education, rather than individual knowledge or individual culture. It asks you not so much, What do you know? but, What can you do? Of course, these two aims are not directly opposed, for knowledge and culture are aids to effectiveness; but the difference is obvious enough, and is of fundamental importance, as it supplies a different *motive* for educational effort. In the one case, men study science in the interests of self-culture, for the intellectual pleasure of the individual; and in the other their efforts are directed to clearly conceived human services and the improvement of civic efficiency.

Now, if this be the true view of the aim of education, it seems of the highest importance that it should be generally recognized and acted upon by teachers. Of course there is nothing novel on this doctrine, but in actual practice it is almost wholly neglected; and I have yet to hear of a systematic effort to carry it throughout a scheme of education. In spite of that, I have no doubt that such

an effort must be made, even at the cost of radical changes that may amount to an educational revolution. The purpose of education should be ever present to the teacher's mind, not only when he talks of education, but when he frames his curricula and when he gives his lessons. He cannot effect his purpose unless he brings that purpose clearly home to the pupil's mind. I feel sure that even in the teaching of science we are still too much under the influence of the classical tradition. We must be bold enough to smash up the idol of knowledge; for science is particularly apt to make too much of mere knowledge. It prizes facts so highly that its teachers are prone to be content when these facts are learned. It is just this that causes disappointment in many quarters with science as a means of education. For except to the very few it is not so much the facts of science as the spirit and habit of mind that its study nourishes which make for culture and for social efficiency. Before the best results can be obtained, it will be necessary to spend the same labor and the same ingenuity in making the teaching of science effective for the great end that I have mentioned as was spent in earlier days to derive culture from the classics. Of course, this will make a heavy demand upon the teacher, for it is clearly infinitely harder to instill a scientific spirit into a boy through the medium of chemistry, and make him thereby a more useful citizen, than to rub in a few facts as to the constitution of water or the preparation of chlorine. The teacher of tomorrow must be even broader than today, and he must have a still stronger hold on the respect of the community. He must be preserved as much as possible from narrowing influences, and permitted to soar so freely that he has a wide horizon and some prevision of the day that is to come. For as Thring expressed it years ago: "We stand on the threshold of a new creation. The steamship, the railway and the telegraph have annihilated space with consequences which, in part at least, can be seen by all. But there is an inner spirit, a secret moving truth, that remains invisible except to the very few. And even as birds settling on the telegraph wires grasp the lightning message with senseless feet, and stand on the magic chords as a common perch, and know it not, so it may be with men. They may lay grasp-

ing hands of hard familiar use on rail and ship and wire, and never know the prophet voice within, the inspiration of the life that moves, the real message of the birth to come. But new life *is* being born, and they who heed may know. Teachers, here is our place. This new world will assuredly be what teachers make it. The skilled workman is lord of all things on earth. And the highest skilled work is the work that creates the newer life of the coming time by moulding the instruments and training the living powers that work the work which makes the life of time. And the foremost teachers of the foremost nations are the creators of the life that is to be."

MORE ASSOCIATE MEMBERS

The following former students were elected associate members of the Alumni Association on the dates indicated:—

Dec. 16, 1909: William George Abbott, Jr., '06; George R. Alley, '89, Frank A. Ames, '81; Oakes Ames, '85; Robert D. Andrews, '77; William Atkinson, '92; Charles D. Austin, '74; George M. Bartlett, '05; Henry D. Barto, '96; Walter C. Bates, '75; Charles W. Bigelow, '95; Raymond D. Borden, '00; Kate A. Bowen, '95; Stephen B. Boyd, '91; Dwight F. Boyden, '83; Mary Bradley, '95; Edmund H. Brown, '81; Samuel J. Brown, '74; Lucian W. Bugbee, '94; Mrs. P. G. Burton, '96; Walter M. Cabot, '97; Frank L. Cady, '01; Philip Castleman, '05; Harry G. Chapin, '04; Edwin K. Chase, '06; Ernest A. Clemens, '83; Henry I. Cobb, '82; Frederic B. Cochran, '82; Ernest C. Cole, '81; LeSeur T. Collins, '08; Sterling G. Cousins, '94; Leonard W. Cronkite, '05; William H. Crowell, '05; Charles Greely Cunningham, '74; Albert L. Cushing, '77; Samuel Dauchy, '88; Llewellyn D. Davenport, '07; Walter D. Davol, '06; Louis L. Dodge, '85; James F. Doran, '03; James A. Dupee, '95; William F. Eastwood, '06; George H. Eddy, Jr., '75; George T. Elliott, '74; Miss Jessie F. Emery, '95; Herbert G. Fairfield, '92; Laura Fisher, '95; Samuel T. Fisher, '82; Charles F. Fitts, '90; Matthews Fletcher, '09; George A. Freeman, '77; Charles S. Frost, '79; Amos E. Gillespie, '97; Harry S. Gilman, '96; Franklin P. Gowing, '90; Harvey E. Hannaford, '82; Charles L. Harris, '77; William S. Haseltine, '79; George P. Hatch, '96; Harold W. Hathaway, '97; Max Hellman, '96; Walter H. Hersev, '82; George S. Hier, '75; Charles E. Hollander, '96; George M. Homans, '04; Arthur Howland, '91; William H. Johnson, '90; Everett S. Jones, '88; Arthur C. Judd, '09; Ralph G. Kann, '07; George H. Kimball, '73; Charles F. Koch, '91; William B. Laine, '99; George D. Luther, '07; James A. McElroy, '07; Mitchell Mackie, '05; Patrick H. Magrane, '02; William L'E. Mahon, '85; John L. Mathews, '96; Kenneth S. May, '09; Frederic S. Mead, '84; Thomas J. Moore, '09; Joseph S. Neave, '86; Harry M. Neff, '82; Samuel G. Neiler, '88; Alex. H. Nelson, '97; Charles A. Newhall, '00; Frank C. Noble, '81; Erskine P. Noyes, '07; Leonard H.

Noyes, '99; Edward S. Page, '93; Charles H. Parker, '95; Arthur L. Patrick, '94; J. W. Pierce, '91; Arthur I. Plaisted, '85; Albert A. Pollard, '92; Wallace R. Pond, '77; Dudley M. Pray, '99; Charles A. Proctor, '87; David Rice, '86; Edward M. Richardson, '07; Charles P. Rockwood, '01; John A. Rooney, '91; Allen C. Sargent, '81; William D. Sargent, '87; Garret Schenck, Jr., '09; Abbott E. Slade, '75; Joseph C. Smith, '88; Robert K. Snow, '90; Willard F. Spalding, '94; Myles Standish, '68; Samuel S. Stickney, '86; Edward N. Stone, '92; Solon J. Stone, '01; James H. Tebbetts, '05; Leonard Tufts, '94; Julian W. Vose, '83; John Ross Wade, '94; Oliver F. Wadsworth, Jr., '89; Edwin N. Walkley, '83; George R. Wallace, '81; James J. Welch, '91; General John F. Weston, '84; Robert S. Weston, '94; William H. Weston, '94; Archer E. Wheeler, '95; Sam Wheeler, '88; Morris H. Whitehouse, '05; Asa W. Whitney, '84; Harvey G. Woodward, '88.

Dec. 22, 1909. Laurance D. Chapman, '09; William B. Given, Jr., '08; Lewis K. Ferry, '08; B. Edwin Hutchinson, '09; Oscar A. Iasigi, '08; Peter F. McLaughlin, '09; Chester H. Pope, '09; Andrew N. Rebori, '08; Forest O. Sprague, '05; Aubrey H. Strauss, '09; George Weinhausen, Jr., '09; Ira W. Wolfner, '09.

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BOOK REVIEWS

LIGHT. By Richard C. Maclaurin, LL.D., Sc.D., President of the Massachusetts Institute of Technology. New York: Columbia University Press. 1909.

The Jesup Lectures on Light by Dr. Maclaurin will give to the intelligent reader a knowledge of modern optics incomparably better than he can obtain from any other non-technical work on the subject. They are popular in the best sense, explaining the results of recent researches in simple and clear language, but never seeking to avoid the real difficulties of an elementary exposition.

A very striking and meritorious point is the unusual attention which the author devotes to the consideration of the wonderfully close numerical agreement between the results given by the wave theory and those reached by measurement. He does not hesitate to introduce tables of values and graphs constructed from these in explanation, and thus removes his subject from the vagueness which it is so difficult to avoid in general explanations, making clear what is meant in physical science by an agreement of theory with fact.

A proper perspective is given to the lectures by a consideration of the optical facts known when Newton began his studies and of his researches upon dispersion. With this introduction the author proceeds to discuss the topics of color vision and color photography, including an interesting and acute analysis of the inherent possibilities of the latter, and then passes to a consideration of dispersion, absorption, and the application of the principles of these to spectroscopy. The subject of series of spectrum lines is discussed at some length, and the results of several very recent studies are stated. Dispersion theories are next considered, and a table given showing the exactness of coincidence between theory and observation in the case of rock salt. A brief consideration of Cauchy's formula serves to show the caution which must be exercised in drawing conclusions much outside of the range of observation. The results of Michelson's study of "visibility curves," which give new evidence as to the complexity of atomic structure, the application of Doppler's principle to the measurement of stellar velocities in the line of sight, the spectroheliograph of Hale and its

truly astounding revelations of solar structure, and finally the vast subject of stellar evolution are tersely but clearly described.

The lecture entitled "Polarization" is devoted to an explanation of the character of light waves and of the nature and phenomena of polarized light, including rotatory polarization, together with a brief reference to the practical application of the last mentioned phenomena in the analysis of sugar. The lecture concludes with the following observation, which one wishes might be heeded by the present generation of Tech students:—

"No wise man would undertake to draw quite clearly the line between 'practical' and 'unpractical,' between 'useful' and 'useless,' knowledge. By all means let us be practical and useful, but let us use these terms in no narrow sense, nor suppose for a moment that the race will advance most rapidly, even with material things, by sticking closely to what is obviously 'practical.' If our ancestors had always been sticklers for 'practical' knowledge, we should probably still be eating acorns."

In the lecture upon the laws of reflection and refraction a number of tables and graphs are given relating to Fresnel's formulæ, and careful consideration is devoted to the deviation of these from observation near the polarizing angle, the explanation of this, the corrected formulæ, and the phenomena of polarization in metallic reflection. Some consideration is also given to the modern astronomical telescope.

The lectures on interference, on crystals, including double refraction and the interference phenomena of crystalline films traversed by polarized light, and on diffraction, present these difficult subjects so lucidly as to compel the attention of the reader. The author does not shrink from the consideration of such topics as index surfaces, conical refraction, crystalline reflection, and the like.

The final lecture of the series, dealing with the relations between light and electricity, will be particularly interesting to the general reader. It contains an explanation of the electromagnetic theory of light, the nature of electrical waves, the rotation of the plane of polarization by a magnetic field, the production of double refraction by electrostatic stress, the Zeeman effect with its beautiful realization of the theoretical anticipations of Lorentz, and, last of all, the discovery by Hale of the existence of the Zeeman effect in the spectral lines of the sun spots, and consequently of the presence in these of a magnetic field.

The volume under review should commend itself to the attention of all Institute men. No one can read it without wishing that he might have the pleasure of listening to an oral exposition from its author of some branch of modern physics.

C. R. Cross ('70).

ORE DRESSING. By Robert H. Richards ('68), S.B., LL.D. Volumes III. and IV. New York: McGraw-Hill Book Company. \$10.00.

Volumes III. and IV. of "Ore Dressing" supplement Volumes I. and II., which were published in 1903. The four volumes constitute a reference work of the utmost value to the mining engineer and practical mill-man. These volumes take up the subject in the same manner in which it is treated in the earlier volumes, and bring the work, as a whole, up to date. New machines and new processes are discussed in their proper places, and more than ninety of the most modern ore-dressing plants, both in this country and abroad, are described with much detail. The features of especial interest, aside from the description of the various mills, are the chapters treating of the latest types of crushing and grinding machinery, the Wilfley table, and some of the more recent processes of ore separation, such as magnetic and electrostatic separation and the flotation processes. Chapter XXIV. contains very valuable information on crushing rolls, giving diagrams and formulæ for computing the proper peripheral speeds for rolls and for estimating the capacity under given conditions. Chapter XXVI. contains a discussion of the tube mill, which machine has so revolutionized the gold and silver milling practices. Chapter XXXVII. contains the discussion of the Wilfley table, as well as descriptions of many of the various other types of shaking and bumping tables that have been introduced into the mills so extensively within the past ten years. The discussion of the theory of action of the Wilfley table when treating different kinds of feed, whether screened, classified or natural feed, is of especial interest to the mill-man. In Chapter XXXIX. the latest developments in magnetic, electrostatic and pneumatic separation are taken up, and the various flotation processes that have recently begun to find application are described, both as regards their theory and application.

Chapter XLI. contains the complete mill trees of ninety-four of the most modern mills to be found in this country and abroad. This chapter is especially valuable to the engineer, containing, as it does, complete data on the adjustments of each machine, its size, capacity, life of wearing parts, etc. A number of mills which were described in Volume II., but which have since been almost completely changed, are here described. The comparison of the earlier mill trees with the later is of itself a valuable study. Unlike Volume II., the mill numbers in Volume IV. are placed in a conspicuous place at the top of the page. This greatly facilitates reference.

Chapter XLII. is of interest to the engineer by reason of the very complete

discussion of the factors governing costs of mining and milling which will be found there. This is illustrated fully by tables showing the costs in various mining districts of the world.

The four volumes have been indexed together, and the index is published in a separate volume. The index as it now stands is very complete.

E. S. BARDWELL, '06.

BIBLIOGRAPHY OF THE COTTON MANUFACTURE. By C. J. H. Woodbury ('73), A.M., Sc.D. 213 pp. Royal octavo. E. L. Barry, Waltham, 1909.

This book is a compilation of titles on subjects pertaining to the cotton manufacture with the name of author, publisher, and date of publication, consisting in all of over five thousand titles in German and French, as well as in English.

They are divided into groups: (1) Cotton Manufacture; (2) Finishing; (3) Engineering and Machinery; (4) History and Economics; (5) Cotton; (6) Textile Journals and Directories.

The author was a member of the Class of '73, M. I. T., and has applied to this book many years of experience in connection with engineering matters pertaining to the cotton manufacture.

Although this great industry of manufacturing cotton requires investment of large amounts of capital and the employment of many varieties of human skill, and has been the subject of many books, yet it is believed that this is the first time that such a bibliography has been compiled, and the book will serve a useful purpose to those having occasion to investigate the technics of cotton manufacture, its engineering, or the live economic questions which the employment of such large amounts of labor implies.

The author has had unusual facilities for this work from his engineering practice, and his connection with the National Association of Cotton Manufacturers, which has given him affiliations providing co-operation with private and public libraries in Europe as well as in this country.

SAFETY VALVE CAPACITY. By Philip G. Darling ('05). Pamphlet. 31 pp. Published by the Consolidated Safety Valve Company, New York.

In this pamphlet, which was read at the meeting of the American Society of Mechanical Engineers held Feb. 23, 1909, Mr. Darling describes an elaborate set of tests made on safety-valves of different makes and types.

The method of making the tests and the apparatus used appear to have been carefully thought out, and it would seem that the results obtained could be depended upon and used to advantage wherever such knowledge might be required. The tests show that there is a wide variation in the capacity of different valves of the same commercial rating, the internal construction and the lift of the valve being the governing features in this respect. The author calls attention to the rules of the United States Board of Supervising Inspectors and of the Massachusetts Board of Boiler Rules, also to the rule adopted by the city of Philadelphia, and compares the results obtained by using these rules with the results obtained by using a slight modification of Napier's formula, from which it would seem as though a simple formula for determining safety-valve capacity can be used to advantage, provided the conditions under which the valve is to operate are known. Attention is called to the fact that the conditions under which safety-valves operate in stationary, locomotive and marine practice vary considerably, and should be carefully considered in determining the proper size and type of valve to use.

The pamphlet contains tables showing the relieving capacities of one make of safety-valve of the stationary, marine and locomotive type, and also gives the results of tests made on different makes and types of valves.

THE CONQUEST OF THE AIR, OR THE ADVENT OF AËRIAL NAVIGATION. By A. Lawrence Rotch ('84). New York: Moffat, Yard & Co.

In these days it is impossible to keep one's attention solely upon the ground. The interest of the world is coming more and more to heavenly things,—not those of Biblical nature, but those which go by motor and gas bag, and which show the fertile invention of the twentieth century aëronaut. The conquest of the air is no myth at the present time, and every day seems to add new wonders to those which have gone before. The well-informed man has to keep busy to be in touch with the novelties of aëronautics, and to compare them with what has gone before. But what shall be done by the ordinary man who has little time at his disposal and yet wishes to speak intelligibly about aëronauts, aërones and aëroplanes, dirigibles, helicopters, and ornithopters, monoplanes, biplanes, triplanes and multiplanes? The answer is very easy. Read "The Conquest of the Air," wherein Professor Rotch has given a primer of aëronautics, in compact, attractive form.

The wide experience of the author as founder and director of the Blue Hill Meteorological Observatory makes him, of all persons, the one best qualified to write such a book. He starts, very properly, with considera-

tion of the ocean of air to be conquered by the *aéronaut*, and shows the problems to be met. The splendid work at Blue Hill has been of great value in leading the way to scientific and practical work in air flights, and Professor Rotch makes very clear the results of observation, especially in relation to air currents and density of the atmosphere.

Balloons led the way to the conquest of the air, but they were more than a century in making such progress. However, there were a number of interesting experiences, and the description of the flights beginning with 1619, of Montgolfier, Rozier, D'Avlandes, Charles and Robert, combined with the reproduction of quaint illustrations of the period, are of special value in comparison with modern-day ballooning, when it has turned to a fad and it is as easy to go up a mile in the air as it is to step on a trolley car.

A new step was taken when the attention of the *aéronaut* was turned to dirigibles, and the study of the experts in this branch of warfare is of special interest. The flights of Santos-Dumont in Paris, the runaway voyage of the "*Patrie*" and the development of the theories of Zeppelin are all treated in graphic fashion, and actual photographs of the leading dirigibles are reproduced to excellent advantage. When man finally started with machines heavier than air, the practical conquest seemed near, and *aéroplanes* now have the monopoly of popular attention. Professor Rotch is especially interesting in this part of his primer, and the remarkable work of the last ten years is well shown. The beginnings of Professor Langley, with their subsequent disappointment, the experiments of the Wright Brothers and the work of their foreign trials, are well presented, and form the most practical part of the whole volume.

In concluding his volume, Professor Rotch expresses the opinion that perfection has not been reached by any means. Modern inventions are especially prominent in minimizing warfare, and history may be changed as a result of *aéronautics*. He concludes: "The advent of *aërial* navigation does not find Dr. Janssen's hope realized, that the conquest of the air might come when civilization has reached such a high plane that it will recognize justice, right and peace as alone consistent with the welfare of mankind. But, while it may not lead to Utopia, the entry of man into a domain to which nature seemed to have denied him access forever will certainly constitute, by virtue of the constancy and intensity of the efforts that it will have cost, and by the discoveries and inventions which it will have provoked, one of the highest titles to glory of which the human race will be able to boast."

Transcript.

MISCELLANEOUS CLIPPINGS

Princeton University, or rather its graduate council, is taking up the same problem of undergraduate activities which about a year ago was met and solved by the Massachusetts Institute of Technology. At the New Jersey institution, as at every other, a popular student, an athlete, or even a lazy man, is tempted to waste time in societies or to indulge in sports and pastimes that tend seriously to interfere with his attention to the curriculum. If one may paraphrase the language of a New England jurist, such a one goes through a good deal of college, but not much college goes through him; and it is questionable whether anything he gains from the football team, the dramatic society, or the glee club,—assuming, of course, that either engages a disproportionate share of interest,—is equivalent to the loss he sustains by avoiding definite work, and to some extent shirking the discipline that tends to the upbuilding of character.

It must be understood that Princeton students are not accused of being grievous offenders in this particular. But the graduate council, which is composed of fifty members, the secretaries of the last thirty-five classes, with fifteen members-at-large, conceives that the situation warrants inquiry at least, and, co-operating with the student council, is planning to look into it. Sub-committees of a committee on undergraduate activities will study and report upon specific phases, such as 'varsity and class athletic organizations, including financial management, official and unofficial organizations of athletic sports, the Glee, Triangle, and other musical societies, the undergraduate periodicals, debating clubs, and literary institutions in general, social life and the Commons, and social organizations.

One hesitates to predict the outcome of this inquiry. Possibly Princeton may ultimately adopt the Tech system of assigning a value in "points" to all outside activities and forbidding a student to accept honors that aggregate more than a certain number of points,—a plan that not only guards against dissipation of effort, but that prevents the centralization of power in the hands of a society or clique. Whether this system does or does not in some form prevail, it is safe to say that, if reform seems to be demanded, it will be brought about quietly, almost imperceptibly, but surely. The graduate council is not a talkative body, but it comes near to being, next to the board of trustees, the most influential organization that Princeton

has, and when allied, as in this matter it is, with the student council, its power is almost irresistible.—*Boston Transcript*, October 28.

Apropos of the action of the Faculty in dropping Spanish as a general study, the following letter has been received from Mr. John Barrett, director of the International Bureau of American Republics, who is particularly well qualified to speak on this subject:—

THE EDITOR OF "THE TECH":

Dear Sir,—I have read with interest your letter of Dec. 1, 1909, as well as the clippings from *The Tech*, which you have kindly submitted to me, with a request for an expression of opinion as to the importance of encouraging the study of Spanish in the Massachusetts Institute of Technology.

With due respect to the ruling of the Faculty as to the importance of the Spanish language in the course of studies of the Institute, I will say that the study of Spanish should be made compulsory, not only in the Massachusetts Institute of Technology, but in each and every college and university throughout the land, as well as in high-grade schools.

Here we have, within the bounds of our own hemisphere, eighteen independent countries of Spanish origin, with a population of 48,000,000, doing a foreign trade amounting to \$1,579,642,352 of which \$443,135,186 represent the share of the United States. Spanish is the mother tongue of these countries, their official as well as their common language, the only means of intercourse among themselves and also with other people. There is, of course, in all of the Spanish-American countries a number of persons able to speak one or more foreign languages, but these are found among the best educated classes, the highest social element, with whom the majority of those seeking employment for their capital or their energies will have very little or nothing to do.

The Spanish-speaking portion of America is the best field open to-day to American capital and enterprise. In the majority of those countries the soil is practically virgin, mining but little developed, cattle-breeding is in its infancy. There are railroads to be built, industries to be established, trade to be increased and hundreds of opportunities for the man properly equipped with a knowledge of the language and a certain degree of proficiency in his calling or trade.

It is the knowledge of the language which has given the representatives of European houses in Latin America an advantage which hitherto escaped the American merchant or manufacturer. It is the familiarity with the Spanish tongue which will place the young American in a position to do in South America, Cuba, Porto Rico, the Dominican Republic, just as much as the European competitors, and even more, in view of his energy and more practical education.

Spanish is now a necessity, which will become more pressing as the time goes by and our commercial and social relations with Latin America grow

more extended. The merchant and the manufacturer will need thoroughly to understand the wants of his customers and cater to them accordingly; the mechanical engineer, the civil engineer, the electrical engineer, will need it to facilitate and expedite his work by his ability to come in closer contact with the men under him; the lawyer will need it to familiarize himself with Spanish-American legislation and social conditions, which will give him an invaluable advantage over his less fortunate colleague; the physician, the surgeon, will need it, in order to be able to practise in Spanish America with success and profit; the diplomat, the statesman, will need it to carry on conscientiously the work of drawing closer together the ties of mutual respect, friendship, commerce and good understanding, based upon the knowledge, through personal efforts and the mastery of the language, of the social structure, temperament and peculiarities of the Latin-American people, in justice to them and to their own great and noble country.

Hoping this expression of opinion will serve the great Pan-American cause in that it may lead the largest number of students to take up Spanish seriously and with a purpose, I am

Very truly yours,

JOHN BARRETT.

P.S.—Of course, the population of all Latin America is 70,000,000, but Brazil and Haiti are not Spanish.—*The Tech.*

The Faculty at the famous Massachusetts Institute of Technology has, it is announced, decided to drop instruction in Spanish and Italian on account of the small number of students attending the lectures and recitations, and the Boston *Globe* comments, "Another illustration of the general failure to recognize how important a knowledge of Spanish, especially, is to young men looking for business opportunities."

For technically trained young men who should be looking to Spanish America for professional engagements the language is of very real importance, and it may not be known to these promising young fellows that, including Santo Domingo and Cuba, there are, south of the United States, some fifteen Spanish-speaking countries, in every one of which young men of energy and efficiency can hope to make their way in these coming years of development and enterprise.

South America is going to astonish the world with its rapid evolution, and already the array of facts about its great ports, its railways, mines and new industries, is impressive. For Brazil the Portuguese language, close of kin to Spanish, is necessary in the case of young men seeking their fortune there.

Some two years ago much was said in the press of the northern republic

about the introduction of Spanish into the public schools of many cities. We hope that the enthusiasm for the language has not died out. In proportion to population there are more young men and young women here speaking two languages than in the United States, and the possessors of three languages are not uncommon. English is much taught here, and adds to a person's chance of securing good employment. Not infrequent in Mexican cities are merchants speaking four languages,—Spanish, German, French and English. Linguistic facility is a decided asset for any business man.—*Mexican Herald*.

President Maclaurin of Tech had an opportunity during the past week to show the social and post-prandial graces which are involved in successfully playing the part of host to a very distinguished body of scientists, and he came out with a good record. One cannot help noting, in his discussions of the problems of higher physics and chemistry, insistence, natural in a man of Scotch stock, that the scientist must be something more than an investigator; namely, a constructive thinker and philosopher. It was shown in his inaugural, and it came to the surface again in his formal paper read last week.—*Boston Herald*.

NEWS FROM THE CLASSES

1868.

PROF. ROBERT H. RICHARDS, *Sec.*, Mass. Inst. Tech., Boston, Mass.

The secretary had an old-time visit from Henry A. Harmon ('69), whose address is Rutland, Vt. Harmon regretted very much that he could not have been here last spring to enjoy the reunion.—After a silence of many years Tryon has written a long letter, which shows his interest in Technology and in the old class. Here it is:—

I have received in past lots of Technology reminders, many unquestionably from your good self, but of all the mail matter two were of no little interest: one a catalogue of the past and present students and the next the photo of a party of eight old gentlemen. The group sent was by a previous mail, a note of salute signed by all, and which I deeply appreciated.

As regards that group, I could not help laughing, most irrespectfully as you boys (!) would laugh, no doubt, could you see "the remains" of him who once looked like William Tryon, the plague of the Faculty in the third year of the Class of '69.

In that group your own kindly face was the first I recognized, then the face of James Pike Tolman (formerly captain Technology Battalion). Next I made out through the lists of time "Bow," whose kindly face it was impossible to mistake. Strange as it may seem, Brooks looked most natural to my eyes, for Mr. B. was not very long of the class. He is wonderfully preserved. How highly I appreciated Fillebrown!

I picked out Richie of '70, and after him Stevens of '68. The two who "floored" me I had to look over the list of names to discover, not that they were older men in appearance, but the features remembered were not so brought out as in the others.

Now for my own appearance. Nobody knows exactly how he himself looks, so I cannot say, but I tell all the "señoritas" here that I am forty-two years old. The girls, with perfectly polite sober faces, look genially at each other, but say nothing; and, if they don't say a word, they must be sort of surprised, thinking maybe I am very much younger. I cannot imagine how you "fellows" feel about it, but, as for my part, I resist being taken for an old "back number." I am honorable enough, however, to admit to being forty-two years of age, but not a year less.

Now I wish to say something about the catalogue of former students. It is full of errors of omission and commission as regards 1869. For in-

stance, we had in our first year Edwin Howland Blashfield, who left the Institute of Technology to perfect his art studies in Paris. He is now the world-famous artist and decorator, whose name would honor any list of former associates.

In those days Blash was a healthy-looking but slightly built lad, great on football. He had great pluck, and was then the only student in our class who wouldn't flinch in a rush against Malcolm Forbes, our giant classmate, who was a famous player.

We had another artist in the class, who stopped with us as long as I did. I refer to Walter Warren Colburn. He was a genius with the pencil, and I think ranked with Blash. Another classmate who stopped for a long term of years as a "special" was Henry Oxnard Preble, of a famous family whose name (Preble) once figured of the old navy. He died July 21, 1871. His father was Rear-Admiral George H. Preble, whose wife was some sort of a connection of my mother's sister. I knew Henry therefore very well.

I am a great stickler for a correct necrology, but no doubt in time the missing data will be procurable, and the catalogue more a work of reference than once possible. We had about sixty-five men in all in '69, and the course was too crowded to be a practical one. Of the four who graduated, not one but had to cut some studies.

—We were very glad to get a newsy letter from William E. Hoit, whose address is 50 Westminster Road, Rochester, N.Y., where he is a special engineer, connected with the New York Central & Hudson River Railroad. The letter was written just after his return from a very happy vacation spent at Scarboro, Me., where he enjoyed the woods, the rocks, the sandy beaches and the ocean to his fill.

1872.

C. FRANK ALLEN, *Sec.*, Mass. Inst. of Tech., Boston, Mass.

There seems to be little new to report. At the reunion last summer Fallon, Patch, Ward, Upton and Allen were in evidence, and at the inauguration Minot was on hand. The secretary meets Brewster every now and then. He lives at Hyannisport in summer and Dedham in winter, and still takes an interest in cattle on the western plains.—Patch is interested in the Lumen Bearing Company in addition to superintending the Buffalo Smelting Works, and his son is manager of the Lumen Company.—Hunt is, where the secretary occasionally meets him, in Boston.—Farley is now senior member of Farley, Harvey & Co., and is also prominent in the merchants' organizations of Boston, on committees to attend to the site for the Custom House or similar public-spirited work.—About two years ago E. J. Carpenter was on from Cincinnati, but failed to connect

except by card.—Herrick's latest address is 2 Rector Street, United States Express Building, New York.—Chapman was still in London at last accounts.—Shepard is now consulting engineer of the Boston & Albany, with enough to keep him busy and happy, but relieved of routine duties.

1874.

CHARLES FRENCH READ, *Sec.*, Old State House, Boston, Mass.

President Maclaurin was the guest of the Association at a luncheon at the Boston City Club on November 15th last. Fifteen members of the Association greeted the new President of the Institute, who seemed especially pleased to meet so many of the men of one of the older classes. In response to a welcome, Dr. Maclaurin spoke informally, and asked for the co-operation of all present in the important work he had undertaken. In the unavoidable absence of George H. Barrus, president of the Association, John C. Chase, a vice-president, presided at the lunch.—William T. Blunt was married to Miss Helen E. Norton on November 27th last at Empire, Canal Zone, Panama. Mr. Blunt is engaged at present on the construction of the Panama Canal.—George W. Pickering has the sympathy of the Association in the recent death of his wife. Interment was made in Bangor, Me., Mr. Pickering's family home.—John C. Chase, in company with Professor Prescott of the Institute, made a trip to the Pacific Coast last summer. They attended several gatherings of Technology men while *en route*.—The secretary recently called at the studio of William F. Halsall in Boston, and saw there several paintings on the easel which justify Mr. Halsall's reputation as a marine painter.—The secretary rejoices, in common with the people of Boston, on the restoration of the Old State House. The historic building probably looks at the present time much as it did when it was erected in 1713.—George E. Doane, of Middleboro, has been elected to serve a second term as representative to the General Court of Massachusetts for the Seventh Plymouth District.—Alexander Luchars, who was with us in 1869-71, is president of the Industrial Press at 40-55 Lafayette Street, New York city. This company publishes *Machinery*, a monthly publication that has grown to tremendous proportions and influence under Mr. Luchars' management.

1875.

E. A. W. HAMMATT, *Sec.*, Hyde Park, Mass.

It is rather late to refer to the June reunion, but, in view of the fact that I was unable to attend on account of business engagements in Maine, I venture to call attention to the attendance of '75 men at the various functions, as reported to me by our president: at the Governor's Reception, 3; at the City Club smoker, 4; at Nahant, day of classes, 11; at Pop Concert, 14; at Nantasket, 13; at Banquet, 7; and there were at least three men who belong with us, but who are also connected with other classes, who, I find, reported with those classes. A point of special interest is that four men attended the reunion who have not previously been at any of our meetings; namely, King, Shockley, Stanwood, and Whittemore.—I learn from Bakewell that Shockley has been in Russia, but has recently returned to London, where he will probably open an office.—Stowe's youngest daughter, who is on the stage, has recently been playing in Boston, at the Hollis.—Four more of the boys have recently put in applications for associate membership in the Alumni Association; namely, Bates, Eddy, Hier, and Slade.—Charles L. Harris, who was with the class in 1871, 1872, 1873 and 1875, recently resigned the office of manager of the lubricating department of the Walter Pierce Oil Company, to accept the office of third vice-president and sales manager of the Scullin, Gallagher Company of St. Louis, Mo. Mr. Harris has been engaged in railroad work for the larger part of his life, having been connected with the Burlington & Missouri, now part of the C., B. & Q., the Topeka & Santa Fe, and of late years he has been one of the most active factors in the railroad trade of St. Louis and the South-west.

1876.

JOHN R. FREEMAN, *Sec.*, Providence, R.I.

Professor W. O. Crosby is just about completing a study of the underground water resources of Long Island with reference to the extension of the water supply for Brooklyn, N.Y. For some years past he has devoted a good deal of attention to co-operation with engineers in the study of underground conditions as affecting foundations, quarry sites, and proposed tunnels. Among his recent studies have been those of the foundations for a dam across the Mississippi River near Keokuk, Ia., and for a high dam to be built on the Feather

River in California.—We learn from the San Francisco papers that Willis E. Davis, '76, has recently experienced the sorrow of the death of his wife. Mr. Davis has achieved much distinction as an artist during the past few years, and his paintings have been spoken of with much appreciation by his San Francisco friends. It speaks well for his ideals that, after his successful business career, he was not content with the classification of "capitalist," accorded by the San Francisco directory, and on retiring from business activities occupied himself with art, and achieved distinction. Some of his classmates remember that during our days of training in mechanical drawing the margins of his sheets outside the border line bore sundry evidences of the native talent to which he later gave fuller scope.—Charles T. Main continues one of the busiest mill builders in New England. Some thirty or more different projects for new structures and extensions have been claiming his attention during the past year, and he has had the pleasure of designing and supervising the construction of the largest individual worsted mill in the world.—J. B. Henck, Jr., appears to have settled down permanently in Santa Barbara, Cal., and to be taking things comfortably after a life of varied activities.—Charles T. Pritchard has for some time past been president of the American Gas Light Association, and in addition to having developed one of the most economical gas plants in the United States at Lynn, Mass., has found time to act as consulting engineer for the improvement of sundry other important plants.—Frederick Greeley's health has greatly improved. A year ago he found himself so poorly that a complete rest became necessary, and in the course of this he made a European trip. He has been interesting himself of late in the movement for children's playgrounds in Chicago. No more cheerful or companionable man than Greeley ever lived, and his many friends will rejoice in his return to health.—Failing health, due to living too long in the high altitude of Leadville, where he was exceptionally successful as a mine manager, has compelled Theodore Schwartz to give up professional cares for a time, and he is at present residing at Brookline, Mass.—Frank W. Hodgdon, in addition to his duties as chief engineer of the Massachusetts Harbor Commission, has been devoting some time during the past year to supervising the completion of a system of canals which will soon permit inland navigation without interruption from Jacksonville to Miami, Fla. While in the south last spring, Mr. Hodgdon contracted a severe case of typhoid fever, from which he has now completely recovered.

1877.

RICHARD A. HALE, *Sec.*, Lawrence, Mass.

It is rather late to talk about the June reunions. Our class, however, had a dinner at the University Club at which eighteen members were present. Among the members who have not attended for many years were F. H. Bacon, of Park Street, Boston, and Stephen Decatur, of Portsmouth.—Professor Swain, of '77, who has recently received the appointment of Professor in the Civil Engineering Department of Harvard University, has the best wishes of all his classmates in the new fields of labor to which he has been called. The high standard to which he has brought the civil engineering department at the Institute is a sufficient warranty that the same high standard will be maintained in his future work in his new location.—Wallace R. Pond, a former '77 man, is president of the Pacific Pond Tampon Company at Berkeley, Cal.—Arthur G. Everett ('77) is building commissioner for the Building Department of the City of Boston.—Frank B. Locke has served for several years as Commissioner of Public Works at North Adams, Mass.—Earle Harley Gowing, born in Woburn, Mass., July 10, 1853, died in Millinocket, Me., November 24. His death was the result of an accident. The *Reading Chronicle* says:—

Mr. Gowing was one of the well-known water-works engineers of Boston, being a member of the New England Water Works Association and the Boston Society of Civil Engineers, a member of the Massachusetts Institute of Technology, Class of '77. He was a member of the Boston City Club, Middlesex Club, Exchange Club, Economic Club, Boston Yacht Club, Melrose Lodge of Elks and Good Samaritan Lodge, A. F. & A. M., of Reading.

Mr. Gowing was a member of the Reading Water Board, and was a resident of this town. He was director of the Liberty Trust Company of Boston and the Millinocket Trust Company of Millinocket, Me. His death was caused by an explosion at the latter named Trust Company.

Mr. Gowing married in September, 1883, Isabel P. Dinsmoor, who survives him, also a daughter, Margaret Emma.

1885.

ISAAC W. LITCHFIELD, *Sec.*, 88 Broad Street, Boston, Mass.

The writer has just learned that E. C. Lufkin has recently been made second vice-president of the Texas company with which he made connection during the past year. Mr. Lufkin was formerly

general manager of the Snow Steam Pump Works of Buffalo. His headquarters, which have been at Fort Worth, Tex., will soon be changed to Houston.—At the third annual convention of the National Society for the Promotion of Industrial Education, held at Milwaukee early in December, Charles R. Richards, director of Cooper Union, New York, spoke on the exhibition of trade school work shown at the convention.—The secretary recently received an interesting letter from Mahon, stating that he is with the Taylor Iron and Steel Company, 100 Broadway, New York. He has a son who is now taking his third year in the mechanical engineering course at the University of California, who he expects to send to the Institute after his graduation there. Mahon is an active member of the Technology Club of New York.—Frederick Newell addressed the Appalachian Mountain Club in Huntington Hall, December 15, on "The Conservation of Water Resources of the West." Newell has recently returned from a trip with the United States Senate Committee on Irrigation which took nearly all summer. He spent fifty-four days of travel with the committee. Inasmuch as they travelled by special train, they were able to make the runs at night and spend the daytime inspecting in automobiles. As chief of the Reclamation Service, Newell has spent nearly fifty million dollars in large hydraulic works for storing flood waters and distributing these to the arid lands. The waters are sold to the settlers at cost, with the view of returning to the reclamation funds the amount invested and using this over again for the construction of new works.

1887.

EDWARD G. THOMAS, *Sec.*, 36 High Street, Brookline, Mass.

Armington is now president of the Euclid Crane-Hoist Company, of Euclid, Ohio.—Sturgis has not yet entirely recovered from the effects of his automobile accident and has spent the past few months at Kenosha, Wis. He now expects to return to Chicago about February 1.—Frederic H. Keyes ('93) has joined the engineering forces which Sprague heads at 88 Broad Street, Boston. Mr. Keyes will take up general mechanical and steam engineering, thereby filling the place left vacant in the organization by the death of C. K. Stearns. He has been for some time manager of the Robb Mumford Boiler Company. Sprague will continue to devote his energies to the mining field, specializing in investigations and reports and in planning the electrical equipping of mines. He has been continuously at work for a number of years in electrifying

plants in the West Virginia coal fields, while his recent investigations and reports have been on properties as widely scattered as Alaska, Wyoming, Nova Scotia and Nicaragua. Henry D. Jackson ('98) will take up general electrical work of all descriptions, giving especial attention to the equipment of mills and factories. Messrs. Sprague, Keyes and Jackson, therefore, cover nearly all branches of commercial engineering, and also have connection with Henry F. Bryant ('87), P. W. Davis and Henry W. Sherman for advice in their respective fields of civil, chemical and mill engineering.—The secretary has returned to Boston, and is acting as engineer for the Choralcel Manufacturing Company at 34 Farnsworth Street, where his special work will be the development of their experimental laboratory and the reduction to commercial shape of a variety of inventions in musical and other fields.—Twombly, in association with Mr. F. W. ter Meulen, has opened offices at 111 Broadway, New York, N.Y., where they will act as general consulting engineers. They have on hand the reorganization of several large machine and boiler shops, the planning of several paper mills and the service engineering, including heating, lighting and ventilating of a large apartment hotel.

1888.

WILLIAM G. SNOW, Sec., 1108 Penn Mutual Building, Boston, Mass.

The New York *Daily Tribune* of December 5 contains illustrations and descriptive matter relating to the new Police Headquarters Building designed by the firm of Hoppin, Koen & Huntington (244 Fifth Avenue, New York), of which F. L. V. Hoppin is the head. The new building, which will cost with furnishings about \$750,000, is situated on the triangular site of the old Centre Market at Centre Market Place, Grand, Centre and Broome streets. The new Police Headquarters Building seems oddly out of place among the dingy tenement-house blocks and shops which surround it. The building is in the Gregorian style, and is built of granite and limestone, with trimming of terra-cotta. Its shape is that of a slender flatiron, the "nose" of which points north. The sides of this flatiron are not of exactly the same length, for the building has a frontage of 311 feet in Centre Market Place and of 309 feet in Centre Street. At its "heel" the flatiron has a frontage of 88 feet in Grand Street. The frontage of the "nose," or Broome street end, of the flatiron is only 46 feet. Five stories high, the building is surmounted by a great gilded dome rising to a height of

182 feet above the curb.—John M. Sully is now mining engineer with the Chino Copper Company, Santa Rita, N.M.—B. R. T. Collins has recently returned from Texas, where he has been located since April, 1908. His residence is Newton Centre, Mass.—Professor Arthur B. Frizell is located in Lawrence, Kan.

1889.

PROF. W. E. MOTT, *Sec.*, Carnegie Technical Schools, Pittsburg, Pa.

O. W. Pickering, who is superintendent of a large plant at Leominster, Mass., expects to send his older son to Tech next year. His second son was born Nov. 22, 1909.—J. P. B. Fiske has recently put out a new catalogue, which is said to be a wonder.—The following new addresses have been received:—Edward W. Hyde, 72 Front Street, Bath, Me.—Frank L. Pierce, 169 Brown Street, Providence, R.I.—Robert C. Williams, care of Williams & McAlpine, 70 Independencia, Durango, Mexico.—Less than forty subscriptions to the Second Class Book have been received by the secretary, insuring a sum which is not adequate for its publication. The committee has, however, gone ahead with the work, believing that the class would stand behind them, and it is hoped to have the book ready at an early date. The special committee appointed a year ago to arrange for holding the annual class dinner in New York city on the first Monday in February will soon be ready to send out notices.

1890.

GEORGE L. GILMORE, *Sec.*, Lexington, Mass.

Mr. H. L. Noyes is with the Union Carbide Company at 79 Wall Street, New York, N.Y.—Mr. A. W. Woodman has severed his connection with the Roebling Construction Company at Chicago.—Mr. Samuel Storrow is at 505 South Hill Street, Los Angeles, Cal.—Professor Gary N. Calkins and Miss Helen Richards Colten were married in Cambridge, Mass., November 29.—Colonel Charles Hayden was one of the party from the Boston Chamber of Commerce who visited Chicago early in December in the interests of the future improvement of Boston.—Mr. E. V. Seeler was one of the jury selected to pass on the sketches submitted by thirteen architects in the competition for the selection of an architect for the Post-office Building at Honolulu, which is to cost \$850,000.—Mr. H. P. Spaulding held an exhibition of water colors at the Copley Gallery

103 Newbury Street, Boston, from November 29 to December 12.—Mr. E. B. Raymond, who has been with the General Electric Company since 1890, and for the last few years assistant general manager, has tendered his resignation to take effect the 1st of February, when he goes to Pittsburg as vice-president of the Pittsburgh Plate Glass Company.

1891.

HOWARD C. FORBES, *Sec.*, 88 Broad Street, Boston, Mass.

Plans for 1911 are progressing. At the present time the committees desire all possible suggestions, and they ask everybody to write to the secretary their ideas, particularly on what we shall do, and how we shall proceed to get out the biggest crowd. The class book will be an important feature of this anniversary. When you receive the blank, it is very important to return it promptly with the questions fully answered. It took over a year to collect the data for the last class book, and even then only half the class replied at all. Dig out a graduation photograph at once, and prepare to have a picture taken soon, as both of these will be necessary.—Henry A. Fiske writes:—

To write about my personal affairs seems somewhat like an obituary, except that it deals partly with futures (obituaries do sometimes). Primarily, I am located in the big city, and naturally feel a little lonesome. However, the headquarters of my firm are in Philadelphia, so that I can get down there once in a while and be cheered up. I am in charge here of a very lively branch office of the old established firm of Henry W. Brown & Co., dealers in insurance of all kinds. Our specialty is fire protection and prevention. Many of our clients came to us primarily because of our reputation along that line and their desire to prevent or stop fires, that being more important to them than the cost of insurance.

As an example of our work, I might mention the Metropolitan Street Railway, whose insurance matters we have handled for the last two years. Before that they had frequent and severe fires, and were unable to buy good insurance except to a very limited amount. They have spent under our direction two to three millions in improving their properties and making them safe against fire, with the result that they have made no claim on the insurance companies since then, and are able to buy all the first-class insurance they need and at about one-fourth of the former cost. We have also taken up with them many details of fire prevention and protection, such as guard and watchman service, improvements in cleanliness and "housekeeping," care of fire apparatus, rigid and frequent inspection by competent parties of all matters pertaining to the fire hazard, etc., with the result that many of their properties are now the equal, if not the superior, of any similar

properties in the world. Our great aim is to interest the property owner in fire protection, that he may realize the dangers as well as the possibilities for improving his property. Fire protection engineering is rapidly becoming an important branch of engineering work, and we are endeavoring to make full use of our experience in this line in connection with our business as insurance brokers and agents.

I am living at Mt. Vernon, N.Y., and, while I presume there are some Tech men there, I have not had the pleasure as yet of making their acquaintance. My two girls are nearly grown up, one being as tall as her mother. They have not yet expressed a desire to go to Tech. One of them admits she prefers "society."

The latch-string is out at 73 Maiden Lane, also 178 Summit Avenue, Mt. Vernon. Come and see me.

—Woodruff Leeming writes:—

You asked me to write to you before the 15th a résumé of what I have been doing within the past year. I fear I may be too late, as the matter had slipped my attention.

During the past year I have had the good fortune to win a competition for the Nassau Country Club at Glen Cove, L.I., which, it is hoped, will be the largest and best-equipped club-house on Long Island.

I am doing it in the Tudor style of architecture, and trying to make an ideal English country home, as the surroundings adapt themselves to a building of this character.

The National Arts Club of New York honored me by putting me on the Board of Governors, and we are hoping to make this club one of importance in the art world.

Of greater importance, however, than all these is the fact that a little over a year ago I was made the father of a fine boy, who has already learned to play the "Stein Song" on the pianola.

During the past year I was elected secretary of the Brooklyn Chapter of the American Institute of Architects. This Chapter is gaining strength every year, and took a very active part in "killing" the Code which the Tammany administration tried to have accepted by the city.

The prospects for work in the coming year are very bright, and the character of the work in and around New York city is improving wonderfully every year.

—George K. Hooper writes:—

Responding to a suggestion transmitted through Fiske, would say that some time has passed since I have said anything for publication for Tech men. So I shall begin back three years with my marriage in 1907. Later that year I bought a residence in Madison, N.J., so am firmly established now in this part of the world. A fine boy, now fifteen months old, has come to us.

The "Roosevelt depression" was apparently less disastrous to me than

to other engineers in this vicinity, as I had and took in sufficient work to keep us all busy. The resumption of prosperity has brought me some large commissions, and I am now finishing up a large plant in Philadelphia, Pa., and one in Rochester, N.Y., while I have in hand two large commissions, one a twelve-story office building in this city and a large plant in Buffalo, N.Y., comprising iron, steel and brass foundries, with their attendant storage yards and buildings for one of the country's large corporations.

I am making plans also for a large extension amounting to a doubling in size for the plant above mentioned at Philadelphia.

The present interest in foundry methods and the saving in labor in foundry operations has found me in an advantageous position to handle work of this nature, as I had had much practical experience in advanced ideas on this work, and a large amount of this class of work is being given to me.

I have this fall been appointed a lecturer on these matters in connection with the Industrial Courses of Columbia University.

In May, 1909, I moved my office to considerably larger and better quarters on the twentieth (20th) floor of the fine building of the City Investing Company, at Broadway and Cortlandt Street, New York, to better accommodate my needs.

Stoughton ('96) has an office as a consulting metallurgist with me, and we work in harmony on many matters.

Packard ('98) joined my force last summer.

I hope that '91 men may drop in when in New York, as it always gives me pleasure to see them.

—F. S. Vielé writes:—

Your personal call this morning and request for some information about myself is such a clear indication of your loyal efforts that it must be answered immediately.

Past history is not particularly interesting to any one. I believe that through your insistence I have from time to time informed you as to my movements.

Some two years ago I stopped working for others, and determined to try to see if better results could be secured by branching out individually.

In the early part of 1907 I organized a corporation under the laws of the State of New York with the name of the Electric Operating Construction Company, with offices at No. 49 Wall Street, for the purpose of financing, promoting, constructing and operating public utility enterprises, more particularly those having to do with electrical developments. We have been successful, certainly up to our deserts, although we are always hoping for better things.

We have practically completed the construction of a small water power company, The Arizona Power Company, near Prescott, Ariz., which bids fair to be successful and profitable. We, therefore, are a member of "the

trust that controls all other trusts," although up to the present time I had not known it.

So far as I can see, there will be no changes in my location or sphere of usefulness for the next three years at least, and I can consequently be counted upon as reachable at the above address for that time.

—Arthur E. Hatch (formerly with Bay State Dredging Company) is now connected, as general manager, with Roy H. Beattie, Inc., engineers and contractors, of Fall River, with office at 247 Atlantic Avenue, Boston. The firm of Roy H. Beattie, Inc., is well known along the New England coast, and for years has been a leader in its line of work,—pier, wharf, breakwater, dredge or other engineering or contracting work, also diving, submarine inspection and reports.

1892.

W. SPENCER HUTCHINSON, *Sec.*, 1235 Morton St., Mattapan, Mass.

FOREWORD.—I desire to acknowledge my appreciation of the generous contributions of a number of members of the class in presenting the following bits of news and reminiscence. If it meets your approval and suggests something to you, make note of it, and send it on at once, so it may be enjoyed by all. Don't fail to send me everything in the way of publicity relating to our men or their work. I regret that I find myself a comparative stranger to many, but expect to remove that deficiency. From thirty-eight letters recently sent out, I received fifteen replies. I shall endeavor to recite history. Kindly don't ask me to invent it.—Harry J. Carlson, of Coolidge & Carlson, architects of Boston, is about to move from 22 Congress Street, because the building is to be torn down to give place to the new building of the Boston Stock Exchange.—William Y. Chute is president of the Minneapolis Society of Fine Arts. The Class of '92 was particularly fortunate in entering the Institute at a time when the heat of a political campaign called for a torchlight parade with a large Tech contingent. Men of the class must remember the tremendous uproar of applause that greeted Will Chute as he entered the class meeting soon after he had been haled before the Faculty to answer for placing a particularly offensive transparency high over the entrance of Rogers Building. He is redeeming himself most earnestly in Minneapolis as president of the Minneapolis Society of Fine Arts. He prepares and "feeds out" to the art-loving public of this city the finest obtainable exhibitions of paintings, etchings, photography, prints, and lectures on things refined and

beautiful. We cannot imagine Chute disfiguring a fine piece of architecture with a torchlight transparency, but would like to see him put to another test, for his fondness for fun has not noticeably abated. Chute is now proud possessor of two daughters.—George Dorr, Jr., manages the North-western Agency of Ford Automobiles at St. Paul in capacity of vice-president. Dorr knows a lot more than most of us about automobiles, but he withdrew from the annual State Fair races this year.—Herbert G. Fairfield is now of the firm of Russell & Fairfield, insurance, who have recently removed to new offices at 20 Kilby Street, Boston.—Edward P. Gill reports that the lumber business continues to be good in Baltimore.—George H. Goodell prospers among the railroad outfitters at St. Paul.—The following item is copied from the obituary column of the *Paper Trade Journal*:—

B. Frank Huntzinger, head of the Paper Manufacturers' Company, died on Oct. 19, 1909, after an illness which had been long, though not continuous. Mr. Huntzinger was a member of the widely known Huntzinger family, formerly prominent in financial circles in Pottsville, Pa. He came to Philadelphia a decade back, and for many years was connected as salesman with A. G. Elliot & Co. About five years ago he associated himself with the late Mr. Dager, who also had been a salesman with the Elliot house as the Manufacturers' Paper Company, and shortly thereafter became a moving spirit in and secretary of the Philadelphia Paper Trade Association, afterward, however, withdrawing both from office and from membership.

—W. Spencer Hutchinson, mining engineer, with office at 8 Congress Street, has been absent from Boston almost continuously since the reunion, spending the summer in Arizona and visiting Colorado and Montana this fall.—A. F. Knudsen was in Seattle during the summer, in charge of the Hawaii exhibit, for the Department of the Interior of the United States Government. Who saw him?—Frederick H. Meserve writes from New York:—

Your request for copy is here, but I have little news and no thrills. Certainly, I cannot compete with the letters of adventure in business and travel that have recently appeared in the News from Classes of THE TECHNOLOGY REVIEW. For over sixteen years I have been connected with cotton and woollen manufacturing interests in the North and South, and in my many trips about the country to the mills have met many Technology men, and our interest in the old days would be revived, at any rate temporarily, by reminiscence.

In May of this year I was admitted to the firm of Charles W. Turner & Co., bankers and brokers, 74 Broadway, New York, and also became a

member of the New York Stock Exchange, and my travelling up and down the country for business seems to be over.

—Leonard Metcalf writes from Boston:—

I have returned this morning after a two weeks' absence in Chicago, Indianapolis, Vincennes, Ind., and Centreville, Ia., and am leaving this noon for Wilksburg, Pa., for another week's stay. Should I hear of anything of interest to you in the Pittsburg region, I will try to drop you a line, as I occasionally meet some of our classmates in that city.

—J. Scott Parrish makes occasional trips to New York and New England. He occupies an important position in the Richmond Cedar Works, one of the largest, if not the largest, wooden ware manufacturers in the United States. He has a beautiful country home, as well as town house, near Richmond, and is fortunate in having a lovely family.—Albert A. Pollard is much interested in the architectural development of his city, Minneapolis, and assures us that he is enjoying business there to a degree not experienced in former places of residence.—Theodore H. Skinner writes from Oneida, N.Y.:—

I am living in the country on an eighty-acre farm when I am at home, and trying to put into practice some ideals of simple living. When away, which has been more than half the time, I am strenuously following up the commercial side of chain reinforcement, which I have developed, and in connection therewith some other engineering problems that I have run across in trying to sell chain for jobs in sundry places. For example, I have just come back from Port Arthur, Ontario, where I have sold some chain, and had gone to see that the men were handling it to the best advantage. There I found a chance to try some new ways of handling concrete that had been hatching in my box for some time. I got the contractor to put in a "set-up," such that he can land the concrete for his entire job from a small Ransome hoist tower and a hopper situated on the tower by means of gravity pipe lines. We are using six-inch wood pipe-wire, wound, that I found at the local water-works yard. We swing the pipe line by rope loops from the steel frame of the story above where concrete is wanted, and with a drop of only ten or twelve feet in a distance of two hundred feet find that the wet mix used flows plenty freely enough from the hopper to the place of deposit. The pipe line can be easily swung, can be easily lengthened or shortened, as the work demands. Accurate costs are being kept on the work, and it looks as if the usual costs will be more than cut in two. I expect to collaborate an article on this matter for *Engineering News* with the contractor when the job is done.

—Edward N. Stone, 175 Remsen Street, Brooklyn, N.Y., is appraiser of real estate for Brooklyn with the Title Guarantee and Trust

Company.—Richard Waterman six months ago went from Boston to become secretary of the City Club of Philadelphia, 1418 Walnut Street. He promises something interesting for the next REVIEW.—Channing M. Wells, vice-president of the American Optical Company, writes, "I have been married ten years, and have four sons."—Frank Yoerg is associated with city government of St. Paul, Minn., as president of the Assembly. Yoerg is very modest. Will some one kindly enlighten us?—Joshua Atwood, 3d, is engineer of the highway division of the street department of the city of Boston.—John A. Curtin is a member of the board of selectmen of Brookline. The Boston *Evening Record* of December 9 says that he is to be elected secretary of the Republican State Committee.—Ralph H. Sweetser writes:—

I've been in Columbus, Ohio, with the Columbus Iron and Steel Company since November, 1907 superintending their blast furnace plant of two furnaces of a rated capacity of 250 tons each. Both furnaces have been relined and improved, and we have put in new equipment, so that the output has increased from less than 400 tons per day to 565 tons per day.

I have written a few technical articles, and have investigated the blast pressures inside the furnace, which is an entirely new stunt. Lately I have found barium in blast furnace slags, and am investigating its behavior. For the past three years I have studied slags with the idea of preventing slips and explosions in the furnace which have been so prevalent where much Missabi ore is used. We have used 90 per cent. Missabi ores without any trouble whatever, and are using 70 per cent. now, because that is the proportion on hand.

We are trying hard to make blast furnace operating as safe as possible, and we believe that most of the horrible accidents can be avoided.

Last summer I spent two weeks in and around the "Canadian Soo," where I lived for over three years previous to coming here. I have bought a camp in the woods fifty-six miles north of the Soo, and hope to get a few days each year of excellent trout fishing. There is considerable game near the camp, but I am not much of a hunter.

—The Concord (N.H.) *Evening Monitor* of Dec. 16, 1909, says:—

Arthur W. Dean, state highway engineer, was on Wednesday appointed chief engineer in charge of Massachusetts highway construction, and will assume the duties of the position as soon as he can close his relations with the New Hampshire department, which have been continuous since the office of state engineer was created by the legislature.

The appointment comes through a general change in the methods of the Massachusetts department, owing to the enlarged duties and powers of the commission.

Arthur W. Dean is a native of Taunton, Mass., and was educated in the

Taunton public schools and the Massachusetts Institute of Technology. He went to Nashua as assistant city engineer in 1892, and in 1896 he was appointed city engineer, a place he held until 1902, when he accepted the post of engineer to build the lines of the Southern New Hampshire electric railways from Nashua to the sea. He became advisory engineer to the State in 1904, in planning a scheme for a system of state highways which is now being carried out. The next year he was made state engineer, and has since been engaged in building the trunk lines and various local roads.

Mr. Dean is a member of the Board of Public Works of Nashua, which position he will probably hold until the expiration of his term a year hence, as he will retain his residence in that city.

Mr. Dean is a member of the American Society of Civil Engineers, which is the ranking body of the profession in this country, and since he has been state engineer, he has attended the international meeting of highway engineers, held in Paris.

—In the editorial columns the *Monitor* comments thus appreciatively on the services Dean has rendered:—

In surrendering State Engineer Arthur W. Dean to Massachusetts, New Hampshire gives up a great deal. It loses the services of a civil engineer who was trained in one of the best institutions in the world, and whose education had been continued in responsible positions before he entered upon the duties of his state office. It loses the services of a good roads enthusiast, who has the happy faculty of making others see things with his eyes and come to his way of thinking about the benefits from better highways. It loses the services of a hard-working, painstaking, never-tiring official, who has made the State's welfare his objective, and who has had the faculty of looking ahead so accurately that he has not had to retrace his steps because he was on the wrong track, although often blazing his path. It loses the services of an honest and conscientious counsellor of the executive department in its important work of developing a state-wide system of highway improvement which should meet public needs and satisfy the tax-payers who were footing the bills. It loses the services of a man in whom local boards and officials have confidence, and with whom they have found it a pleasure to be associated.

Our loss is our sister Commonwealth's gain, and Mr. Dean's also. There could be no better testimonial to his good work for us than the verdict of Massachusetts, the leading good roads State, that he is the man for that broader field. New Hampshire gives up Mr. Dean with regret, but our congratulations upon his good fortune are none the less sincere.

Good roads will continue to be built in New Hampshire upon the broad, sensible, economical lines laid down by Mr. Dean and the governors and counsellors whose trusted adviser he has been. Our State is doing as much as any, in proportion to resources, and changing leaders will not be allowed to check the good roads advance. For all that, we wish Mr. Dean had not been wanted in Massachusetts.

1893.

FREDERIC H. FAY, *Sec.*, 60 City Hall, Boston, Mass.

A dinner of '93 men in New York was held at the Technology Club there on the evening of December 22, those present being F. G. Ashton, G. T. Blood, J. C. Boyd, P. G. Carter, F. G. Clark, J. A. Emery, G. T. Hanchett, H. N. Latey, F. W. Lord, F. F. Skinner, P. H. Thomas, S. P. Waldron, W. S. Whiston.—Boyd writes:—

It was the general feeling among the men present that they try and get '93 men together in New York at least once a year, and we hope next year to get not only the local men together, but as many men from other localities as possible. It would have interested you to have heard the men handle the '93 Class cheer: they did it as though they had done it every day since they left the Institute.

—The following changes of address have recently been reported: Frank S. Badger, care the J. G. White Company, Cordova, Argentine Republic, South America.—William T. Barnes (residence), 57 Grafton Street, Newton Centre, Mass.—Charles E. Buchholz, 163 Sterling Street, Watertown, N.Y.—James A. Emery, 1115 Broadway, Room 2010, New York, N.Y.—Arthur Farwell, "Musical America," 505 Fifth Avenue, New York, N.Y.—Marvine Gorham, care Schweppe & Wilt Manufacturing Company, Detroit, Mich.—Harry M. Latham, 94 Grove Street, Worcester, Mass.—George L. Walker, 3420 Broadway, New York, N.Y.—A letter has recently been received from E. C. Bryant, professor of mathematics at Middlebury College, Middlebury, Vt., stating that he is now regaining strength after a severe illness.—A. L. Goetzmann is the author of an article entitled "The Dry Mixture of Concrete," which was published in Volume I. of the Proceedings of the National Cement Users' Association.—About three years ago Frederick H. Howland gave up newspaper work for a time, and with his brothers he undertook the development of a plantation at Los Palacios, Pinar del Rio, Cuba. After getting the plantation well started and while waiting for orange-trees and the like to grow to a productive size, Howland returned to this country in 1908, and for a year was engaged in newspaper work in Baltimore. Recently he was secured by the Chamber of Commerce of Boston, the largest organization of its kind in the country, to become the editor of *The Chamber of Commerce Journal* and to take charge of the publicity work of the organization. Howland came to Boston late in the fall. His address is Chamber of Commerce, Boston.—

Frederic H. Keyes, for several years general manager of the Robb-Mumford Boiler Company of Boston and South Framingham, Mass., has resigned his position with that company to take up consulting engineering practice at 88 Broad Street, Boston, in association with Timothy W. Sprague ('87) and Henry Docker Jackson ('97). This practice will be along steam and mechanical engineering, mining and electrical lines, including hydro-electric developments. After some two years of outside engineering work following his graduation, Keyes returned to the Institute to engage in teaching, and for four years was instructor there in mechanical engineering. For three years he was employed by Stone & Webster on mechanical engineering work, principally in connection with the purchase and installation of power plant machinery. Early in 1903 he became general manager of the newly formed Robb-Mumford Boiler Company. Since its organization in 1907 Keyes has been a member of the Board of Boiler Rules of Massachusetts, a state commission of five members empowered to make and standardize rules governing the construction, installation and inspection of steam boilers in the state, Keyes being the representative of the boiler manufacturers. Massachusetts was the first to introduce anything of this sort, and the work of the commission is attracting considerable attention elsewhere. Keyes was reappointed to the commission by Governor Draper in 1909, to serve for a term of three years.—Mr. and Mrs. Henry A. Morss returned to Boston late in November from their wedding trip around the world, which occupied eight months and included 36,000 miles of travel. Leaving Boston on the 22d of March, they crossed the continent, stopping at the Grand Cañon on the way. After a couple of weeks in California, they sailed from San Francisco on April 9 for Japan, going by way of Honolulu. Upon their arrival at Yokohama on the morning of April 26 it was their good fortune to find that they were in season to attend the emperor's cherry-blossom garden-party, one of the big social events of the year in Japan, which was to take place in Tokyo that afternoon. In Japan the Morsses travelled about to several of the usual places where tourists go, visiting Tokyo, Nikko, Miyanoshita, Nagoya, Kioto and finally arriving at Kobe the last of May. Here Morss succeeded in chartering a steam yacht, and with two friends spent two weeks cruising in the Inland Sea of Japan, going along from place to place, stopping two or three times every day, visiting some fairly large cities, but making a more special point of calling at small places not usually visited by foreigners. In this way one is able to see the Japanese at home, where they are little affected by foreign in-

fluence. The cruise covered the whole length of the Inland Sea and back, some 600 miles in one of the most beautiful cruising grounds. From Kobe they took a steamer to Manila, then on to Hong Kong, where they made the usual side-trip of one day to the really Chinese city of Canton. Morss reports the latter a wonderfully interesting place, the very narrow, crooked streets fully meeting his anticipations, but the smells not being as much in evidence as he expected. From Hong Kong their journey took them to Singapore, just north of the equator, and, as it was about the first of July, Morss on this voyage saw the sun in the north for the first time. Next they crossed the equator to the island of Java, said to be the most beautiful island in the world, where three very pleasant weeks were spent. The island contains a great many volcanoes, and, as Morss had become much interested in volcanoes from his talks with Professor Jaggar, who crossed the Pacific with them, Morss visited two active craters, and would have visited more, had time allowed. From Java Mr. and Mrs. Morss returned to Japan by way of Singapore, Hong Kong and Shanghai, and the last week in August crossed to Vladivostock on the mainland of Asia. They proceeded to Europe over the Trans-Siberian Railroad, ten days being required for the journey from Vladivostock across a corner of Manchuria, Siberia and Russia to Moscow. A few days were spent in each of the cities of Moscow and St. Petersburg, after which they went on to Berlin and other cities of central Europe. Morss is interested in aëronautics, being a member of the Aëro Club of America and of the Technology alumni committee on the subject; and, while in Europe, he made some investigations as to what is being done at various places in the establishment of courses in aëronautics. Incidentally, he visited Zürich for the start of the long-distance balloon race for the Gordon-Bennett cup, and saw forty-nine balloons go up one day and eighteen on another, and also saw the dirigible balloon "Parseval" sailing around. In Berlin and Paris he saw several flying machines, both monoplanes and biplanes, making more or less extended flights. In London Morss saw a good deal of Rigby Wason, who seemed well and happy, and asked many questions about the boys.—The annual report of President Fred. W. Atkinson to the trustees of the Polytechnic Institute of Brooklyn, made last October, contains the following statement relative to Spofford's resignation from that institution to return to the M. I. T.:—

The most important event connected with the membership of the Faculty was the resignation last June of Professor Charles M. Spofford, head

of the department of civil engineering. He has become head of a similar department in the Massachusetts Institute of Technology, succeeding Dr. George F. Swain, who has accepted a professorship in the post-graduate School of Applied Science of Harvard University. Professor Spofford's expert knowledge and high accomplishment in his chosen field, his thoroughness and skill as a teacher, his administrative ability and leadership as a departmental head, his industry and vigor, made him a success with us, and pre-eminently qualify him for the responsible position to which he has been called.

—Fenwick F. Skinner, of New York, recently came to Boston to discuss, before a meeting of the Boston Society of Civil Engineers, the paper of the evening upon "The Waterproofing of Engineering Structures." Skinner has had an important part in the engineering work upon the new Pennsylvania Railroad Terminal in New York, and had been in charge of the construction of a good deal of the waterproofing work described in the paper.—By application of his engineering training to financial matters, Charles W. Taintor has prepared a remarkable work, "An Analysis of the Earnings of the United States Steel Corporation from its Origin to July, 1909." This analysis consists of a large chart and an accompanying explanatory statement which gives a brief description of the stock and an estimate of the standing of the corporation, its securities, etc. The chart is printed in ten colors, and is a statistical picture of the earnings of the corporation and the distribution of the same for the thirty-three quarters of its existence. To quote from a review of the work in the financial columns of a leading newspaper:—

The object is to demonstrate with geometrical accuracy the worth of the securities of this corporation as an investment on the basis not alone of current income, but on the basis of average achievement from the beginning to July 1, 1909. Sundry important axioms and corollaries are deduced by the author, and the conclusions reached are bound to interest and instruct those who would acquaint themselves with this work.

The analysis is one of the most complete published, although extremely simple, and in it the investor will find much valuable information. The work has been highly commended by financial papers, and it is a strikingly original method of analyzing financial propositions. Says one of the best-known newspaper men of the country, "It is a marvel of perfect concentration, the story of a billion and a half within the vista of the eye." Taintor is a member of the banking firm of Tucker, Hayes & Co., 8 Congress Street, Boston, and is in charge of their bond department.

1894.

PROF. S. C. PRESCOTT, *Sec.*, Mass. Inst. of Tech., Boston, Mass.

It is a great pleasure to record the fact that a considerable number of our non-graduate members have lately become associate members of the Alumni Association. With the present arrangement it is hoped that this membership may be very largely increased, and the secretary will be glad to receive names for proposal for membership. The greatest change of base since the last report is undoubtedly that of Schiertz, who has left Montana, and is now with the Hunan Imperial Smelting Works, Changsha, China. Just before leaving, he wrote:—

I enclose you one of the slips with my future address. By this you will see that I once more leave these United States. I expect to be gone about eight months, but business may keep me out there longer. If the country agrees with me, I might even stay and grow a pig-tail. I will try to drop you a few post-cards from the Celestial Empire.

—Harold Chase recently visited Boston for a few days, and his stay was made the occasion of an impromptu luncheon party at the Tech Club, at which Phelan, Piper, Claflin, Batcheller and Prescott met him most pleasantly. He is still connected with the firm of Hugh McRae & Co. of Wilmington, N.C., but is located for a portion of the time at the New York and Washington offices of the company. He gave a most interesting account of some of the developments in the south in connection with the absorption and utilization of water powers. He reports seeing Bates occasionally, as the latter is also located near Wilmington, in charge of a large plant for the manufacture of fertilizer. Right here it may be remarked that, if the men who are planning to visit Boston either for business or pleasure, would notify either the secretary or some other local member of the class, it would probably be possible to get a half-dozen or more '94 men together, even on very short notice. Try it.—Day has recently removed his patent law office to Room 910, Penn Mutual Building, 24 Milk Street, Boston.—Cousins is in the fruit business in Cucamonga, Cal.—W. H. Weston gives Box 3032 as his permanent address. He writes: "I am just travelling, that is all. Just finished a ten months' trip to the West Indies, Central America, Mexico, and our West. Start again in January."—J. R. Wade writes that he is located at Chico, Cal. He has recently joined the Alumni Association.—R. H. Ober is now in the office of the city engineer in Seattle, a city which abounds in inter-

esting problems in engineering and sanitation on account of its phenomenal growth.—Spalding is a member of the firm of Collins, Spalding & Co., members of the Boston Stock Exchange. His office is at 10 Post-office Square.—Mr. and Mrs. deLancey (Miss Gallup) have announced the birth of a daughter, Margaret, on June 15.—N. H. Janvrin is with the New York Water Supply, R. F. D. 4, Newburg, N.Y.—The *Sunday Globe*, in one of its numbers in the late summer, gave an interesting account of Mason Chace and an interview on the subject of high-speed submarines.—Ferguson has been in charge of the construction in connection with the new Charles River Dam, by which the old salt-water basin of the Back Bay is changed to a fresh-water lake.—Tenney is living at the Hotel Canterbury, Boston.—Thropp has returned from his wedding trip to Europe, and is living at Mercersburg, Pa.—Locke's present address is 1880 Seventh Street, Brooklyn.—Dr. Florence Loughton has a large practice in New York City, with an office and private sanatorium at 33 West 96th Street.—The class lost by death on July 31 Irving E. Beach, a graduate in Course V., and since then a manufacturer and business man in Lawrence. A very quiet, unassuming man, he was probably known to comparatively few of the class, but those who were intimately connected with him, as were his associates in the Department of Chemistry, know his worth and his unfailing loyalty.—Prescott took a vacation trip to the coast in the early autumn, in company with John C. Chase, '74. The journey out was by way of the Canadian Pacific Railway, with stops at Winnipeg and in the Rockies, then to Vancouver, Seattle, and the Exposition. A number of Institute men were met at Seattle, but no '94 men. After a few days at the Exposition, which proved to be most interesting in its display of the possibilities of the Northwest, Tacoma and Portland were visited. At the latter city S. G. Reed was readily found, and the few hours with him were most heartily enjoyed. Were it not for Reed's modesty, the secretary would dilate at length on the part the former has played in the development of the city and its institutions. It may suffice to say that Reed is president of the German Bank, that he had a great part in organization of the present very efficient street railway system, that he raised a quarter of a million dollars for the Young Men's Christian Association, and that he has done dozens of other good things. In addition to being a bank president, Sam is a rancher, and a most enthusiastic believer in agriculture as a profession as well as an avocation. His interest in educational matters is shown by the fact that he is member of the board of overseers of Whitman College, Walla Walla, and that it was to him that inquiry was directed when

it was desired to find out about the system of organization and instruction at the Institute.—Chase and Prescott went from Portland to San Francisco, where a brief stay was made, and where Woollett ('94) was discovered. He is engaged in architectural work, and with his brother, a member of the Class of '99, has designed and built some of the new business buildings that have risen from the fire-swept city in an imposing array. A trip to Berkeley gave a glimpse of the University of California, but failed to get the travellers in touch with Tech men, with the exception of Philbrick ('02), now bacteriologist of the water supply. Los Angeles and San Diego were the next objective points, and a pleasing and long-to-be remembered feature of the stay in Los Angeles was a dinner given by the Tech Society. About fifteen members were present, and the evening was a delightful one. Leeds ('06) gave a most interesting paper on the exploration of the Green River in Utah for the government. To all the members who so delightfully entertained the travellers, and especially to Mr. H. A. Prime, of the city engineer's office, thanks are cordially extended. On the return trip, by way of the Grand Canyon and the Santa Fe to Chicago, a Tech man of thirty years ago was discovered. In Chicago Prescott called on Clement and on Holden, who has had much to do with the development of the plans for improvement of Chicago which have called forth so much favorable comment in all parts of the country.—R. S. Weston was married on December 21 to Miss Josephine FitzRandolph, at Plainfield, N.J.—Batcheller has become a member of the instructing staff in the Mining Department of the Institute.—Phelan and Hall ('95) have just translated a new text-book in chemistry, entitled an "Introduction to Experimental Inorganic Chemistry."—H. H. Johnson is still in the Indian service, and is now located at the United States Indian School, Tacoma, Wash.—The secretary wishes to express his regret that the name of our distinguished classmate, Pollock, was omitted from the list of those published as attending the reunion in June. For this and for other omissions the secretary feels duly regretful.—A meeting of several '94 men was held in New York on December 20 at the Technology Club, the occasion being a smoke talk by Prescott. Preceding the talk the following men dined together: King, Pollock, Kirk, Taber, McJennett, Andrews, Green and Prescott. It was a very pleasant occasion, and will, it is hoped, be the first of a series of '94 dinners there. There are over 30 '94 men within thirty miles of New York. Kirk, Taber and McJennett were elected a committee to arrange for a dinner when somewhat more notice can be given in advance. The secretary would suggest that a notice of the dinner

be sent to the Boston and Philadelphia Technology Clubs, and perhaps to others, as '94 men are frequently in New York on business, and would probably be glad to arrange their trips to meet an occasion of this kind.

1895.

GEORGE A. ROCKWELL, *Sec.*, 101 Tremont Street, Boston, Mass.

Arrangements for the reunion of the class next spring are progressing, but the details have not been decided upon. In connection with the reunion the following letter from F. C. Schmitz to H. K. Barrows will be of interest:—

Dear Barrows,—You will, no doubt, be glad to learn of the informal dinner of those members of the Class of '95 located in the vicinity of New York city, held last evening, October 5, in the Technology Club, 17 Gramercy Park, South.

This is the second informal dinner we have had, and it certainly seemed good to sit down together again for a bite and the glad hand of fellowship.

Among other things we talked over the proposed fifteenth reunion of the Class in 1910. Of course, we are all in favor of the scheme, and I am confident we will send at least twenty from here. The suggestion was made that the reunion should occur during graduation, and that as a class we should attend the graduation exercises on one of the days. This would, we think, be a good thing for us, as showing what Tech is doing, and for the boys receiving their degrees, as showing what Tech has done.

We are to have another informal dinner at the same place at 7 P.M., the first Tuesday in April, 1910, and we wish to extend through you the most cordial invitation to all our classmates to be with us at that time. We can then whoop the reunion through, and make it something for all other classes to work up to.

The men present last night were as follows: E. C. Alden, 15 Dey Street, New York city; Azel Ames, 30 Church Street, New York city; A. L. Canfield, 114 Liberty Street, New York city; Fred B. Cutter, 17 Gramercy Park, New York city; H. E. Davis, 1 Madison Avenue, New York city; Benjamin C. Donhan, 43 Exchange Place, New York city; F. E. Faxon, Poughkeepsie, N.Y.; Francis E. Green, 2 Rector Street, New York city; Frank B. Masters, 23 West 24th Street, New York city; George Nichols, 82 Wall Street, New York city; J. W. Thomas, 10 Bridge Street, New York city; John C. Wolfe, 154 Nassau Street, New York city; F. C. Schmitz, 11th Avenue and 25th Street, New York city.

—Members of the class will be gratified to learn that our classmate, Harold K. Barrows, has been appointed associate professor of hydraulic engineering at the Institute. Barrows has had an

excellent experience as a hydraulic engineer, both in teaching and in practice, and he will be a great accession to the Faculty of the Institute.—The following was recently printed in the *New York Tribune*:—

Chicago's Civil Service Commission recently held an examination for the place of chief gas tester under a new law, and the results mightily please the *Daily News*, which remarks that "they are another illustration of the possibility of attracting experts into public service through merit tests rationally applied." The list of eligibles which the commission has posted is headed by Judson P. Dickerman, a graduate of the Massachusetts Institute of Technology, assistant professor of chemical engineering at the University of Wisconsin and a gas expert on the Wisconsin commission which regulates public utilities. The gas inspector for the city of Madison, Wis., is second on the list, the chief of a St. Louis gas company's laboratory is third, a chemist for Swift & Co. is fourth and the chief gas tester of Detroit is fifth. The satisfactory result of this competition is similar to that achieved by the New York State Commission in examining for high-grade technical positions, including even those of a legal character.

—The engagement has been announced in New York of Charles Merrick Gay, formerly of Boston, and Miss Louise Gallatin, of New York, daughter of Mrs. Albert H. Gallatin, and great-granddaughter of Albert Gallatin, Secretary of the Treasury under Presidents Jefferson and Madison and minister to France under Presidents Madison and Monroe. Mr. Gay is a graduate of Harvard, '93, of the Massachusetts Institute of Technology, and the *Ecole des Beaux-Arts*, Paris. He lives in Wyckoff, N.J.

1896.

PROF. CHARLES E. LOCKE, *Sec.*, Mass. Inst. of Tech., Boston, Mass.

Myron E. Pierce and William A. Kneeland announce that they have opened offices for the general practice of the law at 6 Beacon Street, Boston, Mass.—Mr. T. I. Jones was on in Boston to attend the recent electrical show in Mechanics' Building, and took the opportunity to call upon some of his old friends.—The following is taken from the *Boston Sunday Herald* of October 24:—

Driven from their boat by a gasoline explosion, George A. Jordan, a hotel proprietor at Nantasket, and Edward and John Manahan, of Boston, escaped by taking to a small boat which they had in tow when crossing Boston Harbor last night about seven o'clock.

The party in Edward Manahan's boat "Gysmah" was on the way from

South Boston to Nantasket, and had arrived opposite Pumpkin Island when the explosion took place. The boat was practically destroyed.

Manahan seems to be rather unfortunate of late. The last report from him was that he was laid up with a sprained ankle. He has been the greater part of the fall at Minot's, engaged in motor boating and fishing. He has recently joined his family in their new house at East Milton.—Newspaper accounts state that Butler Ames is working assiduously upon the development of his air-ship, but up to the present writing it has not reached the point where he cares to make any public statement.—Mr. Russell W. Porter has been very much in the public eye in connection with the Cook-Peary controversy. As topographer for the McKinley expedition, he has been quoted by several papers. The following account was written by him especially for this '96 class news:—

As the topographer on Dr. Cook's Mt. McKinley expedition in 1906 to Alaska, I was with this gentleman in the field throughout most of the summer, and I am quite sure that at that time he had no knowledge of spherical astronomy or the simplest principles involved in locating one's self on the earth's surface by observations on the celestial bodies. It is interesting, in this connection, to note that in April of 1908, scarcely a year later, Dr. Cook claims to have determined the position of the earth's axis, or "boreal centre," as he dramatically puts it.

His use of the glass horizon (instead of mercury) will weaken the value of his sextant readings considerably. I tried the black glass artificial horizon in a topographic reconnaissance of part of the Franz Josef Archipelago in 1904, but abandoned it as entirely unreliable under arctic conditions. This is due to small particles of ice, or hoar frost, collecting under the levelling bubble, which, notwithstanding the check of reversing the level, render it extremely unreliable. The whole operation of observing the sun at such low altitudes as obtained in the north in early spring, by use of the artificial horizon, is unsatisfactory, to say the least.

If the instruments by which Dr. Cook located himself at the "boreal centre" are not forthcoming for inspection by experts when his field notes are gone over, unknown errors inherent in the instruments themselves will lessen, to a great extent, the weight to be put upon the value of the results.

A smattering of the knowledge of the common methods, involved in our latitudes, of obtaining longitude and latitude, cannot be applied when astronomical time ceases,—a condition obtaining at the pole,—and nothing short of a thorough understanding of the fundamental principles underlying spherical astronomy will save the explorer at the pole from graver error, unless one is lucky enough, as Peary was, to retrace his upward sledge tracks far enough south for local time to become appreciable again.

A knowledge of Greenwich (or Washington) time is essential from the time one leaves his base of known longitude until his return. This can only

be carried by watches slung about the neck inside one's shirt. These time-pieces receive the hardest of treatment from shocks and changes of temperature. Their daily rates are constantly changing, and frequent determinations of these rates are necessary. The stars, planets, and the moon are completely obliterated in the heavens in summer at all times of night and day, owing to the incessant glare of sunlight, reflected from the surface of the frozen ocean, hence the sun is alone available. I have been unable to pick up the moon in midsummer in latitude 81 degrees north, with a powerful glass, although the telescope was pointing at the place in the heavens occupied by that body.

So much for the conditions that confront the astronomer in the polar regions, and hence the relative importance of full data in the hands of competent scientists before the merits of any aspirant's claims for the North Pole can be properly weighed.

Dr. Cook's action in scattering his Alaskan party to different points of the country towards the close of the season, and then appearing in a few weeks with his account of the ascent of our highest mountain, in company with one companion, a packer, has been open to severe criticism. After arriving at the southern base of Mt. McKinley, he said the project would be abandoned for that year, and, when the different field parties convened at tide-water in September and heard the story of the ascent, the surprise and disappointment among the members who had hoped to be in at the finish was more or less justified.

This action, coupled with the doctor's abrogation of certain signed contracts with his members, has given rise to this feeling of doubt in the mind of the public over his achievements, and a requirement of absolute proof to substantiate his bald statement of facts.

RUSSELL W. PORTER (IV.), '96.

"LAND'S END," PORT CLYDE, ME.,
November 8, 1909.

—John L. Mathews writes that he has recently settled in St. Louis, having taken a position with the Mississippi Valley Transportation Company, 918 Bank of Commerce Building, St. Louis, Mo.—Mr. John G. Callan has recently associated himself with the firm of Arthur D. Little, Inc. Their announcement reads as follows:—

The rapid extension of the work of this laboratory has brought to our attention with increasing frequency a class of problems susceptible of effective attack by a laboratory organization, but requiring for their solution an extensive knowledge of electrical and mechanical engineering.

For the efficient handling of such problems we have added to our staff as electrical engineer Mr. J. G. Callan, for some thirteen years with the General Electric Company. His experience with them covers engineering on transformers, on insulation, gas engines, Curtis turbines and turbine compressors, as well as work with the Patent Department.

—The latest report from Manahan is that he has broken one of the bones of his forearm cranking his automobile.

1897.

JOHN A. COLLINS, JR., *Sec.*, Lawrence, Mass.

George H. McCarthy (IX.) announces that he is now associated with George P. Fellows in the real estate, brokerage and insurance business under the firm name of McCarthy & Fellows. Their offices are in the Transit Building at Nos. 5 and 7, East 42d Street, New York city.—James W. Smith (XIII.), superintendent of the Trenton Iron Company, left about the middle of November for a six weeks' business trip to Panama and the Canal Zone. The trip was made by way of Jamaica, and he just escaped being caught in the tremendous tropical hurricane that did so much damage in the West Indies. The Trenton Iron Company is furnishing a considerable amount of the wire cable used in the canal work.—(Later) Smith writes that he met many Tech men on the isthmus, one of whom, Blunt, '74, was married at Ancon early in December.—George A. Moran (V.), who for a number of years has been an assistant chemist at the Pacific Mills, Lawrence, Mass., has been transferred to the Cocheco Print Works, Dover, N.H. The Cocheco plant has recently passed into the control of the Pacific Mills. Moran's present address is 611½ Central Avenue, Dover, N.H.—Percy E. Blood, formerly with the Westinghouse, Church, Kerr Company, is now with the New York Central & Hudson River Railroad at 335 Madison Avenue, New York city.—In the October number of the *Technical World* will be found an article descriptive of a new process for making ethyl alcohol from sawdust and other forms of wood waste. This process, which is practical and successful on a commercial scale, producing a 190° spirit at a cost of ten cents a gallon in the barrel, has been invented and developed by two Chicago men, George H. Tomlinson and Malcolm F. Ewen (IV.), '97. As Ewen intimated in a letter to the secretary, the feat was hardly what you call an "architectural stunt," but it goes to prove that Technology turns out "all-round men." This new process seems destined to put certain industries on entirely new bases. Already a \$150,000 plant with a capacity of 1,200,000 gallons of alcohol per year is being built in Georgetown, S.C., adjacent to the works of the Atlantic Coast Lumber Corporation, using the refuse from the mills of the latter as the raw material from which to make the alcohol. This plant is being

erected for the E. I. du Pont de Nemours Powder Company of Delaware, at the suggestion of Irenée du Pont (X.), '97, who, after a careful examination of the details, was convinced that the discovery would revolutionize the present ethyl alcohol industry. An attractive booklet has been issued by the Standard Alcohol Company, The Rookery, Chicago, and copies will be sent to any one interested. Ewen can be addressed there also.—Henry D. Jackson, who for several years has been a consulting engineer, has associated himself with Timothy W. Sprague ('87) and Frederic H. Keyes ('93), to conduct a general consulting engineering practice at 88 Broad Street, Boston. After leaving the Institute, Mr. Jackson was connected with the General Electric Company for two years, and then put in four years with the Boston Elevated Railway Company in electrical engineering lines. He then became consulting engineer for the Light, Heat and Power Company in renovating the Leominster Electric Company, after which he went into general consulting work. From 1903 to 1906 he was a special lecturer at the Institute of Technology. Mr. Sprague is well known as one of our most prominent mining engineers, and has been a lecturer at the Institute for some time on the applications of electricity to mining. Mr. Keyes resigned the position of general manager of the Robb-Mumford Boiler Company, January 1, to become a member of this organization. He is a member of the Board of Boiler Rules of Massachusetts.

1898.

PROF. C.-E. A. WINSLOW, *Sec.*, 157 Walnut Street, Brookline, Mass.

The class held its first informal reunion at the Boston City Club on the night of Friday, December 17. The following fourteen members of the class dined together: Chapin, Coombs, E. R. Barker, Wright, Humphrey, Scott, Coburn, Pease, M. V. Ayres, Bennink, Bragg, Wadsworth, Godfrey and Winslow. The meeting was such a success that it was voted to hold monthly dinners during the coming winter, the next to be either the 14th or the 21st of January.—Seidensticker announces the birth of a daughter, Katherine, born October 5.—Nelson also has a daughter, Lois Emma, born November 21.—Bleecker writes under date of November 27:—

Just a line to tell you a news item, namely, daughter, Mary Webb Parks Bleecker, born to Mr. and Mrs. John S. Bleecker, Oct. 18, 1909, at Columbus, Ga. I read the 1898 news notes in the REVIEW each month, and that's about all I get time for, but enjoy those immensely.

—Blackmer has accepted a position as superintendent of the Raven Mine at Butte, Mont.—Winslow spends January, February, and March giving courses in bacteriology and sanitary science at the University of Chicago. He returns to the Institute for the rest of the second term, and in September goes to the College of the City of New York as associate professor of biology.—Wadsworth has an important report of 150 pages on the possible freight, passenger, and water front developments of Boston in the recently issued Report of the Commission on Metropolitan Improvements. Wadsworth is now at work on the development of certain coal mines in Rhode Island which are being opened up by Mr. Henry M. Whitney and his associates. These mines have been abandoned for many years, as the coal they yield is of graphitic nature, and hard to ignite. A process has recently been discovered for chemically treating the coal so as to make it entirely suitable for the market at a low cost, and 250 million tons will be ultimately available right in the heart of New England.—M. V. Ayres has published a series of important papers on the excessive weights of cars used in steam and electric transportation, and on the saving which might be effected by reducing them. He has been devoting his evenings to the study of law, and was admitted to the bar last spring.—Coombs designed and installed the terra-cotta finish used in the new Boston Opera House instead of limestone. Special slabs were designed for the large pillars, and a very fine piece of work was done in the execution of the colored panels by Bela Pratt.—Chapin has succeeded in building up an important department of research in connection with the work of the New York and Boston Dye Wood Company. This department is in line with the latest German tendencies, and is largely the result of the work of Chapin himself and of Jacoby.—E. R. Barker has been reaping large rewards from the development of his patented apparatus for making bisulphites of lime and magnesia for use in the wood-pulp industry, which depends on the passing of fine bubbles of sulphur dioxide through the proper solution.—Godfrey has just issued a "Laboratory Manual" to accompany his "Chemistry" published a year ago.—Coburn has spent a considerable part of the autumn at Sonora, Mex., and in the vicinity, in a wild and beautiful country just south of the Arizona line. He has prepared plans for a dam and bridge over the Yaqui River near this place.—Scott has been active in the organization of a special engineering department in the Dennison Company, with which he has for some time been connected. The department has very recently installed a large new power plant.—Wright, who is now lecturer on oral hygiene at the Harvard Dental School and assistant at the

Harvard Medical School and the Massachusetts General Hospital, has made some very important discoveries about the relation between the development of the teeth and the condition of the tonsils, reported in the *Boston Medical and Surgical Journal* for May 20, 1909. Wright finds that at certain periods in the development of the teeth, notably at the ages of two, six, twelve, and eighteen, the tonsils may become considerably enlarged. Under such conditions it has been customary to remove the tonsils, but Wright finds that, if left alone, they return to their normal size. He concludes that the tonsils have an important function in removing the waste matters formed in the production of the teeth, and his results will make unnecessary a very large proportion of operations for the removal of these organs.—The following letter was received from Allyn under date of November 13:—

'98 had a very small but select dinner at the Technology Club on Wednesday night, the 10th inst. You may be interested to know that the following were present: Blood, Edgerly, Lansingh, Nolte, Seidensticker, Taylor, Tew, Wilder, Charlie Wing and myself. It was held on very short notice, or I think we would have had a great many more. There are sixty-seven '98 men (that is, men formerly at some time in the Class of '98) in New York and vicinity. Of these thirty-seven are members of the Technology Club of New York, which, I believe, is the largest number in the club from any class. The fellows were all enthusiastic as usual, and wanted to have a '98 dinner every month. We had regrets from a number of the fellows. Dick Brown has recently lost his father, and Conklin recently lost his mother. Kutroff wrote that he was sorry he could not come, as he had an engagement that evening from 6.30 P.M. to 2 A.M. I don't know whether it takes all of that time to get back from Newark or not. Sargent was at the club at lunch that day, but could not be out at the dinner. Cottle and Jacoby have just returned from abroad, and were therefore too busy to show up. Nelson is teaching in night school. A number of other fellows reported as being out of town. I suppose you have heard of the recent advent of John Allston Sargent. By the way, of the ten men at the dinner all are married but Edgerly, and the last census of the ten gives a prospect of thirteen "ninety-eighters" within the next twenty years. The next time we have a dinner I wish you might be with us.

—Word has just been received of the death, on December 18, of Frank R. Minnig, who was at the Institute from 1895-98. At the time of his death he was instructor at the Central Manual Training High School of Philadelphia, and is survived by a wife and two children. Mr. Minnig was a trustee of St. Andrew's Methodist-Episcopal Church, and was one of the ablest men on the school faculty.

1899.

H. J. SKINNER, *Sec.*, 93 Broad Street, Boston, Mass.

W. M. Corse has severed his connection with The Michigan Smelting and Refining Company, and is now with the Lumen Bearing Company, Buffalo, N.Y.—Philip Burgess is located in Columbus, Ohio, where he is engaged in consulting sanitary and chemical engineering work. The firm name is Burgess, Kimberly & Long.—H. J. Skinner read a paper at the Detroit meeting of the American Gas Institute on "Tar as Applied to the Surface Treatment of Roads."—M. S. Richmond has taken over the management of the William A. Davis Company, manufacturers of United States Treasury writing inks and mucilage. Richmond is president and treasurer of the company.—"Selective Economy in Raw Materials" is the title of a paper by H. S. Mork, just published by Arthur D. Little, Inc. Mork also presented a paper before the October meeting of the New England section of the Society of Chemical Industry on "The Chemistry of Cellulose."—The following changes of address have been received: H. H. Hewitt, 317 Downing Street, Denver, Col.—H. M. Keys, The Martinique Apartments, corner of Joy and Ellis Streets, Atlanta, Ga.; Professor E. B. Phelps, 30 Church Street, New York city.—C. W. Swift, 56 Donnybrook Road, Brighton, Mass.—Frederic Tappan, 1733 Belmont Avenue, Seattle, Wash.—W. M. Corse, care of Lumen Bearing Company, Buffalo, N.Y.

1900.

INGERSOLL BOWDITCH.
GEORGE C. GIBBS.

RICHARD WASTCOAT.
PERCY R. ZIEGLER.

N. J. NEALL, *Sec.*, 12 Pearl Street, Boston, Mass.

The class committee has been wondering why they have heard nothing from Chicago in answer to their notices and requests for subscriptions for the class book to be published next June. We think we have now found the reason for this lack of interest. The following was attached to the statistics sent in by one of the members of the class:—

I don't approve at all of the adoption of a new constitution and self-perpetuating board of managers. Nothing could be better calculated to still more closely put power into the hands of the few and alienate the interest of the majority, and, surely, conditions have been bad enough to make advisable some better means of drawing *all* the men together. Notice

the movement on foot to adopt a new class yell: this is only thirteen years too late. I think that old yell was one thing that "queered" the Class of 1900, like the dog with the can on his tail. I would like to think our class made a good record at Tech, but, so far as I can observe, it has always crossed the wire a poor 'steenth.

I fear it is now too late to rejuvenate the Class of 1900. The most fitting motto from now on would be "Requiescat in pace."

Don't think I had the blues in writing this. I know several others would agree with me.

We do not think that it is necessary to reply to this, because those who are interested in the welfare of the class will understand that there is not much in it. If the men will only let us know what they are doing, and get in touch with the committee, there will be no excuse to say, Let the class R. I. P. We are all working for the interest of the class, and are very glad to receive any suggestions which will be a benefit to it. On Monday, November 15, twenty-one of the members met at the Tech Club, and after a very good dinner listened to the most interesting talk on the "Tomboy Mine" in Colorado, given by Jim Batcheller. He showed a good many lantern slides which gave us a very clear idea of what the place was, and the stories he told about the men at the mine were most entertaining. We hope in the future to have more of such meetings, and to get the members of the class to give us informal talks connected with their work. The following men were present: Zeigler, Burnham, Ashley, Bowditch, Howe, Batcheller, Ripley, Russell, Jackson, Wentworth, Kattelle, Borden, Lawley, Gibbs, Bugbee, Hurd, Stearns, Emery, Wastcoat, Richardson and Neall. We wish everybody to attend these meetings who can, because they are a great benefit to the members, and everybody is sure to have a good time. The price is only one dollar, which includes everything. These informal meetings in Boston are paid for by the members who attend, and the class fund will not be used to pay any of the expenses. This fund, which we are now collecting, is to be used exclusively for the work of the class as a whole, especially the class book which we hope to issue next June. By the time that this issue of THE TECHNOLOGY REVIEW reaches the members, they will have received a notice from the committee asking for contributions to the class fund. We hope everybody will give what he can afford, because the more money we have at our disposal, the better the book will be. Also we ought to have a fund to take care of the small expenses, such as postal card notices and circulars to the class, giving the members information of just what is going on. Send in the cash and statistics: the committee will do the rest. Some very interesting letters have been

received from the fellows telling about their work, and the following is taken from one written by Fred Cooke. You will all remember what wonderful predictions he made about us at commencement, but I don't believe any of them ever came true.

After leaving the Institute, I was in the employ of the Brown Hoist Company in Cleveland for about four months. After that I returned to Boston, and went to work for the Boston Elevated Railway Company, and stayed with them from October, 1900, to July, 1901. July, 1901, I received an appointment as draughtsman in the Navy Yard, Portsmouth, N.H., and stayed there until December, 1903. It was during this appointment at Portsmouth that the fatal fascination of "brass buttons" overcame my otherwise level head, and the result was that in January, 1904, I received a commission in the Civil Engineer Corps of the Navy, where I have since been.

Thurber, of our class, had practically the same experience at the Philadelphia Navy Yard, and we both entered the navy at the same time, but, to show you how differently different things can be started from the same source, Thurber has been at the Navy Yard, Norfolk, ever since he entered the service, and I was first sent to Mare Island, California, where I stayed two years, and from which I was sent to the Philippines, where I stayed nearly three years, returning to the United States in January, 1909, by way of Europe. Of course, the fact that Thurber is married and I am not has some bearing on the difference between our respective movements. My experience in the Philippines was most tame and uninteresting compared with the thrilling reports made by "Colonel" Suter, as I have never been under fire of anything more dangerous than high-balls.

The Philippine Islands, or at least the small portion of them I have seen, are, in my mind, a most delightful place of residence. I mean that seriously, and I look forward with pleasurable expectation to a return to the Philippines some time before I get too old to enjoy them. On my way home I visited China, the Malay Peninsula, India, Ceylon, Egypt, Italy, France and England, and met the returning battleship fleet at three places, Colombo, Cairo and Naples. It was a most magnificent and inspiring spectacle to see the sixteen ships, or rather fifteen, for one came in before, approach the Island of Ceylon on Sunday, the 13th of December, 1908. The vivid contrast of the white hulls with the deep indigo blue of both sea and sky, the white surf breaking on the white coral beach and the interested crowds of natives and English watching the ships from every point of vantage, all united in making the picture a very beautiful one.

Fred also states that Southworth (IV.) is in the Bureau of Yards and Docks in charge of eighteen or twenty draughtsmen, and Redman (I.) is with the District Commissioners.—A letter from Zenas M. Briggs, who was with us for a year or two, states that he has just been transferred to the Philadelphia office of the General Electric Company after being at Schenectady for three years. He is a mem-

ber of the New York Tech Club, and finds it a good investment. We are sure that other men will find it so, too. Briggs was glad to see that the Class of 1900 had found itself, and is going to subscribe to the REVIEW. Chicago, please take notice.—Those in Course I., and especially those who went to Cherryfield for the summer camp, will remember Archibald. He and Bowditch slept together in the same bed, although the mattress was bigger than the spring, and everybody wondered how they ever found room to turn over. Perhaps they didn't. Archibald is now a well-known contractor in Winnipeg, Manitoba, and seems to be getting his share of business. After leaving Tech in 1899, he spent four years with the Dominion Iron and Steel Company and the United Coke and Gas Company, designing and constructing plants. In 1903 he joined the Retort Coal Company, which was later bought by the Semet-Solvay Company of Syracuse, N.Y., and constructed coal washing plants and coke ovens in Dunbar, Pa. Here he fell in with a Scotchman who told him about Western Canada, and in September, 1904, he went to Winnipeg, where he now is in business. He has formed a partnership under the name of George H. Archibald & Co., and is ready to build any kind of elevators, tank storage, mills and factory buildings.—Paul Brooks has given up resurrecting defunct manufacturing concerns, and is going to write about live ones. He is Eastern editor of the *Railway and Engineering Review*, with offices at 30 Church Street, New York. The class committee misses him from their meetings.—Macpherson has been transferred to New York, 15 Dey Street. He did not want to leave Boston, but he couldn't help it. What is Boston's loss is New York's gain.—Chalmers has a son, James Gardiner, of whom he is very proud.—Henry M. Brock, who has been a professor of advanced physics, mechanics, astronomy and geology at Holy Cross College, has been transferred to Woodstock College, Maryland, to pursue his theological studies. For the winter, however, his address is Ore Place, Hastings, England.—The class will be sorry to hear that Dick Westcoat has become overworked and has been compelled to take a rest. In order to help him rest, he has purchased an automobile, which evidently is very healthy, as Dick is using it so much that nobody can find him at home. If we all could afford automobiles, it would be great to be overworked.—Stuart B. Miller announces his marriage to Miss Imogene Rankin, and is at home at 529 Pine Street, Marquette, Mich. Miller is superintendent at the Marquette plant of the Du Pont Powder Company, a position he has held for the past two years. One of his ushers was Albert S. Merrill, of Chicago.—George F. Ashley (IV.) was appointed assistant professor

of technical drawing at Tufts College, June 16, 1909. He also has charge of the course in descriptive geometry at the Lawrence Scientific School, Cambridge, for the year 1909-10.—When John F. Wentworth sent Neall a check for his class subscription, he enclosed the following account of his hunting trip, taken from a Quincy paper:—

John F. Wentworth, of Miller Stile Road, was successful in securing a 191-pound deer on his gunning trip in New Hampshire. It was shot at Albany, N.H., where he also found excellent partridge shooting.

Wentworth has been working hard on his oil engine, and took a change of air and scenery to get rested.—The following men are members of the Washington Society of the M. I. T.: R. C. DeWolf, Library of Congress, Washington, D.C.; W. C. Dean, Navy Yard, Norfolk, Va.; S. F. Gardner, Metropolitan Bank Building, Washington, D.C.; B. R. Johnson, 605 7th Street, N.W., Washington, D.C.; J. T. Maguire, 16th and Newton Streets, N.W., Washington, D.C.—In answer to a letter asking for news, this telegram was received from L. A. Crowell: "Farmer pure and simple, eat more cranberries and help us out." The next time we have a dinner, perhaps we can persuade Crowell to send us samples of his crop.—The following have changed their addresses since the last Technology Register was printed: Frank D. Chase, Central Station, 1 Park Row, Chicago.—Sumner M. Manley, 633 Schaeffer Street, Kansas City, Mo.—Charles H. Stratton, United States Post-office, Paris, Ill.—J. W. Hussey, New York Shipbuilding Company, Camden, N.J.—Conrad Jacobson, 5451 Rice Street, Chicago.—Albert S. Merrill, 1440 Commercial Bank Building, Chicago.—A. G. A. Schmidt, 412 Monadnock Building, Chicago.—Just as this was going to press, a letter was received from F. D. Chase, which shows that Chicago is not entirely dead. The following is an extract from his letter:—

I haven't very much to say for myself except that I have been very busy earning enough to keep things moving, and for the past three years have been architect of the Illinois Central Railroad.

On the first of the year I am going to take a similar position with the Western Electric Company, and expect to handle a lot of big buildings.

Although a Course I. man, I have now a State's Architect license, and have practically switched my profession.

I should be glad to hear the class news, and see what the other boys are doing. My work has taken me all over the country, and it has been my pleasure to meet a good many of the men in the different cities of the Central West from the Gulf to the Great Lakes.

—Anybody going to Chicago will be glad to know that there is a Tech luncheon at the Grand Pacific Hotel every Thursday.

1901.

ROBERT L. WILLIAMS, Sec., 30 Waban Hill Road, Chestnut Hill, Mass.

The following is a clipping from the Boston *Transcript*:—

Miss Eleanor Howard Dean's engagement to Langdon Pearse, Harvard, '99, and of the Class of 1901, Massachusetts Institute of Technology, is announced. Mr. Pearse is a resident of Chicago.

—M. B. Foster recently installed the extensive electrical equipment of the Boston Opera House.—Matthew C. Brush has resigned his position as general manager of the Newton Street Railway Company to accept a similar position with a street railway company in Buffalo, N.Y.—The Cincinnati *Enquirer* printed the following in its November 21st issue:—

Under the auspices of the Ohio Commission for the Blind a unique entertainment will be given in the Avondale Presbyterian Church Wednesday evening, November 24, at eight o'clock. This will consist of a portrayal of the work that is being done by the State of Ohio for prevention of blindness, together with some account of what has been done elsewhere. More than one hundred fine lantern slides will be used. The speaker is Charles F. F. Campbell, superintendent of the Industrial Work of the Massachusetts Commission for the Blind. Mr. Campbell is the leading publicity agent with respect to industrial operations and prevention of blindness in the United States. He is a unique personality and a most entertaining speaker. He is the son of Sir Francis Campbell of London, England, an American citizen, who for his wonderful work among the blind of England was last summer knighted by the king.

—Robert Chase Allen, a special student in '01, is dead. He was married and had two children.—W. J. Sweetzer has accepted a position as assistant professor of machine design in the Mechanical Engineering Department, Case School of Applied Science, Cleveland, Ohio. He writes that he finds the surroundings and work very congenial.—D. H. Ordway is a research chemist in the battery department of the National Carbon Company, Cleveland, Ohio.—W. J. Heinritz, as construction engineer for the General Electric Company, travels around, he writes, "straightening out troubles."—The following changes in address have been recently received: Jules H. Hirt, care Ketelson & Degetau, El Paso, Tex.—John A. Ross, Jr., 1 Willetts Place, Ithaca, N.Y.

1902.

F. H. HUNTER, *Sec.*, 75 Park Street, West Roxbury, Mass.

The first class gathering for the season was a dinner held at the Hotel Oxford, Boston, on the evening of December 14. President Maclaurin and Dean Burton were the guests, our class being the first among the graduates to be honored by Dr. Maclaurin's attendance at its dinner. Music was in order. Stillings brought his 'cello, and, with the violin and piano which were engaged, made up an enjoyable trio in several selections. In the absence of the president, Vice-President Collier presided. Regrets were read from Dr. Williams, the class president, who was called away by the death of a relative, and from Captain Wadleigh, who received orders only the day before to take a detachment of marines to Philadelphia. Dr. Maclaurin talked most interestingly of the status of the Institute and the good work the alumni could do by making the true state of its affairs more widely known. Dr. Burton told us of the changes in student life and conditions since we left the Institute. Cheers for the Institute and for our guests were given. Songs and stories were interspersed. Chalifoux and Charlie Mixter both engaged the piano with satisfactory results, the secretary gave his usual spiel about the class treasury, and the meeting adjourned at a seasonable hour. The classmates present were Collier, Charles Mixter, Butler, Magrane, Chalifoux, Hall, Reynolds, Borden, Whittet, Williston, Hunter, Bourneuf, O'Neill, Robinson, Fitch, Fisher, Shedd, Rob Whitney, Stillings, Walker and Molledo. The following general class news has reached the secretary: Robbins was married on October 6 to Miss Lida Motter, daughter of Rev. and Mrs. Isaac M. Motter, of Frederick, Md. They are making their home at 1703 North 2d Street, Harrisburg, Pa.—Nichols has removed to Minneapolis, and gone into business with a partner under the firm name of Morell & Nichols, landscape architects, with offices in the Palace Building.—C. P. Manning is now with the draughting department of the Noiseless Typewriter Company of Middletown, Conn.—Joe Philbrick was married on June 21 to Miss Clara Belle Smith, of Wheaton, Ill. They are at home at 1503 Union Street, Brooklyn, N.Y.—Magrane reports the birth of a daughter, Martha by name, upon September 5.—Louis Vaughan is engaged to Miss Josephine Forsythe Boyd, of Worcester. Vaughan is with the Fiske Carter Construction Company of 28 William Street, Worcester, they being the successors of the G. H. Cutting Company, with whom he had been for several years.—Steve Gardner is in Seattle, overseeing the construction of a sub-

marine for the Electric Boat Company.—Pendergast dropped in to see the secretary recently. He was about to sail for Europe to put in a year's leave of absence from the Reclamation Service in travel and investigation of European power plants.—O'Neill, who has been instructor in manual training at the Malden (Mass.) High School for some years, was appointed instructor in wood-working at the Institute, and succeeds Mr. Merrick as head of the carpenter shop at the mechanical laboratories. '02 is steadily coming forward at the Institute.—Wadleigh, who has been stationed for some months at the Boston Navy Yard, was recently ordered to Philadelphia with a detachment of the marine corps.—Lockett reports from Chicago that Jackson is now with the Sun Oil Company of Toledo, that W. N. Brown is now in Chicago, that Currey has returned from Mexico, his office address being 832 Commercial National Bank Building, and that J. Larrabee Jones is also located in the Windy City.—Borden has left the Lowell Weaving Company, and his present address is 1501 Beacon Street, Brookline.—Adrian Sawyer is in Augusta, Me., taking charge of the rebuilding of the State Capitol Building for the George A. Fuller Company, who have a contract to remodel the structure.—Montgomery's address is care Newark Inspection Bureau, 756 Broad Street, Newark, N. J.—Howe is with the American Trust Company, 53 State Street, Boston.—Comins is superintendent for the St. Louis Smelting and Refining Company of their new two-thousand-ton mill at St. Francois, Mo.—W. P. Harris' address is reported from the Institute as Richmond Furnace, Franklin County, Pa., and C. H. Sisson's as Eden Flats, Grand Avenue, Walnut Hills, Cincinnati, Ohio. Neither Harris nor Sisson has been reported before for a long time.—Millar has returned to Boston as the eastern distributor of Carbondale paints, and has an office in the Albany Building, Boston.—The secretary herewith begs indulgence of his classmates for not getting any notes into the October REVIEW. It is the only number he has missed in three and a half years.

1903.

F. A. OLMSTED, *Sec.*, 93 Broad Street, Boston, Mass.

Bryan has a baby-girl, now about six months old.—Gleason has made a change, and is now sales engineer with the Dodge Manufacturing Company, with headquarters in Boston.—Newman reports another change. He is now located at Room 640, Old South Building, Boston, as a concrete engineer. He has established the "Concrete Bureau (Registered)," and aims to have his office act as a

clearing house for technical and general information regarding reinforced concrete and allied materials of construction.—A. S. Martin is now with the Costa Rica division of the United Fruit Company at Puerto Limon, Zent, Costa Rica.—M. H. Clark was married October 7, the bride being Miss Augusta May Farnham, of Malden (Boston University, 1907). C. R. Haynes ('04) acted as best man. Mr. and Mrs. Clark went to Bermuda on their wedding trip. They are now living at 7 Glen Rock Circle, Malden, where they will be at home after January 1.—We regret to learn that John M. Grice was killed in a mine explosion in Mexico in September. No particulars have been received.—The following address changes have been noted: Louis W. Adams, care of S. B. Sheldon, Sancon Plant, Bethlehem Steel Company, South Bethlehem, Pa.—John R. Bates, 795 St. Nicholas Avenue, New York city.—Andrew R. Cobb, Port Williams Station, Nova Scotia.—Francis W. Davis, 414 Woodward Street, Waban, Mass.—M. Ferry, 333 Grant Avenue, San Francisco, Cal.—Henry Fitzler, 218 Marcy Avenue, Brooklyn, N.Y.—E. D. Forbes, United States Wireless Station, Rockland, Mass.—Gilbert H. Gleason, 146 Jewett Street, Boston, Mass.—A. Healy, Buffalo, Wyo.—J. S. Joseph, 321 West 92d Street, New York city.—G. C. D. Lent, 4058 North 44th Ave., Chicago, Ill.—R. F. Manahan, Box 105, Minot, Mass.—V. M. Palmer, care of Selden Motor Vehicle Company, Rochester, N.Y.—Louis B. Rapp, R. F. D. 2, Sanford, Fla.—Monthly dinners of the members of the class in and around New York are being continued at the Technology Club. At the December dinner the following men were present: H. Crosby, F. G. Cox, Endres, Joseph, Kearney, McDonald, Schofield and Taylor.—Cox writes:—

John Lawrence Gilson came to New York the latter part of November for another glimpse of civilization. Gilson is with the Cuban American Sugar Company, with headquarters in Cuba, but is likely to be found anywhere from Rio Janeiro to Osaki or Honolulu. He reports that he is not married, but happy.

1904.

R. A. WENTWORTH, *Sec.*, 426 Main Street, Amesbury, Mass.
M. L. EMERSON, *Res. Sec.*, 161 Devonshire Street, Boston, Mass.

H. K. Richardson (VIII.) is assistant professor at the Pennsylvania State College, State College, Pa. He is in charge of the course in electro-chemical engineering, a new course which he is developing from the ground up.—Arthur Roberts is assistant superintendent of manufacturing department, in charge of spinning, with the

Amoskeag Manufacturing Company, Manchester, N.H.—E. H. Russell, Jr. (I.), is draughtsman with the engineering department, N. Y., N. H. & H. R.R. His address is 608 Savin Avenue, West Haven, Conn.—Sammis (II.), after extended practical experience with the Boston Elevated Railway Company and with the Brooklyn Rapid Transit Company, is at Akeley, Minn., as superintendent of railroads for the Red River Lumber Company. He has full charge of construction, maintenance and operation.—Sherrill, whose name always recalls our first, only and most unfortunate cane rush, is at 35 Market Street, Poughkeepsie, N.Y., as manager of the stock exchange firm of Post & Flagg of 38 Wall Street, New York. He was married in June, 1905.—Richard S. Shohl (X.), after engaging for several years in the wholesale clothing business in Cincinnati, has now a real estate office at Room 214 Boston Block, Denver, Col.—C. D. Simonds is a master at the famous Morristown School, Morristown, N.J., where, in addition to teaching, he is physical director and has supervision of all athletics.—The latest from Gunn is contained in the following report in the *Boston Transcript* of November 14, headed "Further Study of Babies," giving account of a conference at New Haven under the auspices of the American Academy of Medicine. The subject of the conference was the prevention of infant mortality. "In a paper pointing out the necessity for more active interest in the subject on the part of the small city, Mr. Selskar M. Gunn, health officer of Orange, N.J., emphasized the value of a thorough study of the problem from the statistical point of view."—Stetson, engineer with the Pennsylvania Lines West of Pittsburg, during the summer had charge of a big track elevation job at Columbus, Ohio. The work consisted in elevating railroad tracks and abolishing grade crossings at six streets.—Vosbury is a consulting engineer, with office at 27 Market Street, Camden, N.J. He has specialized on water-works and hydro-electric plants, and is practising all through New Jersey and Pennsylvania.—Wheat is with the Southern Pacific Railroad Company as inspector of construction. During the summer he was on a new reinforced concrete freight depot and reinforced concrete subway under the tracks at San Antonio, Tex.—W. G. H. Whitaker, Jr., is engineer with the New York Telephone Company at 15 Dey Street, New York.—Jules White is in the Realty Building, White Plains, N.Y., as assistant engineer with the Board of Water Supply of New York City, on the construction work of the Catskill Aqueduct.—Wiard (IV.) is draughtsman with Henry W. Wilkinson, architect, at 114 East 28th Street, New York. He returned last spring from a year's study in Europe.—R. B. Williams is superintendent of the Ray Central Copper Mining Company, Ray, Pinal County, Ariz.

1905.

GROSVENOR D'W. MARCY, *Sec.*, 246 Summer Street, Boston.

There are eight weddings to announce in the ranks of '05 since the last issue of the REVIEW.—Edwin S. Graham and Miss Mary Loving were married on September 29 at Graham, Tex., and are to be at home there after November 1.—Edwin B. Snow and Miss Marion Graham were married on the 9th of October at Buffalo, and are now at home at 92 Pitcher Street, Detroit, Mich.—Grosvenor D'W. Marcy and Miss Helen F. Carter were married on October 14, and are now living at 31 Knowles Street, Newton Centre. William L. Spalding was best man, and H. W. Kenway, A. Merrill, C. W. Hawkes and A. G. Prescott, all of '05, were ushers.—Leonard T. Bushnell and Miss Inez Lucy Brown were married on October 18 at Seattle, Wash.—On October 20 Dr. Warren K. Lewis and Miss Rosalind Denny Kenway were married in Newton, and on the same night Gorham Crosby and Miss May Evelyn Cowan were married at Ashmont, Mass. Crosby is practising patent law at 49 Wall Street, New York, and living at 555 West 160th Street—A. P. Gerry was married to Miss Holmes, of Brookline, on November 23. R. M. Folsom was best man at this wedding.—Gerry is with the Laconia Car Company, Laconia, N.H.—Horace J. Macintire and Miss Elizabeth May Jelliffe are to be married in Brooklyn, N.Y., on the 29th of December.—The engagement of Robert N. Turner and Miss Lilla Clement (Mt. Holyoke, '06), of Waltham, has been announced. Bob has been elected to the Massachusetts legislature from Waltham, and is junior member of the law firm of Kaan, Luce & Turner, with offices at 50 State Street, Boston.—George B. Jones had a son and heir born October 17. George is practising patent law at 1609 Ft. Dearborn Building, Chicago, and occasionally reports news items from that city. He says that the Tech men there have a lunch every Thursday, with an attendance of from eight to twenty, also that T. Green has opened an office for the Ferro-Concrete Company, Stock Exchange Building, Chicago, and that H. M. Cowper is associated with him.—Fred W. Goldthwaite is New England sales manager of the Phoenix Iron Works Company, with offices at 1015 Tremont Building, Boston.—H. W. Donald is assistant adjuster with the Ætna Indemnity Company at 68 William Street, New York.—Sid. L. Cole writes from Little Rock, Ark., that he has no news, but is coming home for Christmas.—T. Herbert Files is resident engineer for Stone & Webster at Schenectady on a large reinforced concrete building which they are putting up for the General Electric Company.—James H. Tebbets is working on the

development of the Great Falls of the Missouri River at Great Falls, Mont. He writes:—

The Falls of the Missouri number five, or rather did, as one of them has been flooded out by the works here. Rainbow is about sixty feet high, one just below about thirty, and the Big Falls about eighty feet high, which is going some for one river in a distance of about eight miles. The development here at Rainbow is only one of a series. There will be two more and possibly three. Here we will develop about 65,000 H.P. with a head of about one hundred feet total.

—H. C. Kendall has been appointed instructor in railway electrical engineering at the University of Illinois.—Clarence E. Gage has left Panama to take an appointment as instructor at Vernona College, Pa.—Professor G. A. Hool, of the University of Wisconsin, writes that he is extremely enthusiastic over the prospects of the structural engineering department in the University Extension Division. He says:—

We have courses in every branch of structural engineering work. These courses are for the purpose of instruction by mail, and are proving very popular. Those in reinforced concrete construction are in greatest demand, and are being made use of by architects and many of the older graduates of technical schools who have not had a chance to become familiar with this type of construction. We wish to reach all classes of men interested in structural engineering, whether they have had any previous training or not along this line. If you come in contact with any one interested, tell them to write to the Extension Division of the University of Wisconsin, and the whole scheme will be explained to them. I wish this might be made known to all Tech men.

—On October 30 W. L. Spalding made his début as a spell binder, doing a light vaudeville skit entitled "Power for Electrolytic Copper Refining" before the Electro-Chemical Society at their convention held in New York.—At a supper of the '05 Boston Club, held at the Technology Club on December 17, the following men were present: Ball, Sprague, Buff, Goodale, Folsom, Kenway, Stebbins, West, Tufts, Marcy, Coffin, G. M. Bartlett and Bradbury; just thirteen, but we had a bully good time, and any '05 men coming home had better call up Main 1837, and ask the secretary if there is a supper coming off while they are here.—Lane Schofield came up for a week in November from Williamson, W. Va., where he is engineer with the United Thacker Coal Company.—W. W. Ammen has left the Patent Office to take a position in the patent department of the General Electric Company at Schenectady, N.Y.—R. B. Simons was forced to leave the Fore River Engine Works by an attack of tuberculosis, and is now at Saranac Lake, N.Y.—The secretary has just

received a report of the death of Lewis D. Eaton, Special '05, who died of cerebro-spinal meningitis at Reno, Nev., on March 18, 1907.—Milton L. Rubel writes:—

I've been so long knocking around la Sierra de Mexico that English as she was taught, polished and purified at Tech has become with me almost an entirely lost art. I now eat, drink, think, sleep and swear in the lingo of this heathen land. However, with the liberal aid of "un diccionario Español-Ingles," and using verbs of only the present tense, indicative mood and one syllable, I am able to ship, by slow mule freight, these few lines advising that I'm at present located near Topia, Estado de Durango, Mexico, as manager of the Pilonas Mining Company. It is *only* three days' horseback ride to the nearest railroad station, and last time I saw a real live locomotive I kissed the cow-catcher in an ecstasy of sheer joy.

—John C. Damon writes from Ames, Col., that he is having all the trouble he wants in operating the Colorado system of the Tel-luride Power Company, since it was damaged by a flood last September.—Fletcher H. Burke is inspector in the Electrical Department of the District of Columbia.—Alfred L. Whitmarsh died of typhoid in Washington last September. The secretary has tried to communicate with the family to express the sympathy and regret of the class, but could not find them.

1906.

FRANK A. BENHAM, *Sec.*, 164 High Street, Boston, Mass.

Earl Bardwell has a position as consulting engineer with the United Mines Company of Converse, N.H. During the winter he will remain in Boston, and consult from a distance. In the spring he will move to Converse, where he will superintend the building of a new mill.—Joe McKernan was married December 15 to Miss Helen Hills, of Plainville, Conn. Joe's headquarters will be in Plainville this winter, where he is engaged on some construction work.—Ray Barber recently received a letter from Tommy Holmes, which, he says, is not for publication. The secretary did find out, though, that Tommy is still "going it alone," but that the prospects are exceedingly good.—Ralph Patch has been recently elected to the Board of Public Works of Stoneham, of which he has also been made chairman, to put him on the shelf where he will be quiet, so he thinks. During the summer he has been superintending the building of large extensions to the plant of the E. L. Patch Company.—Becker was in Boston recently. He is with the Sullivan Machine Company in Claremont, N.H.—Bill Sheldon is expected in Boston

soon, coming on from Colorado.—Ginsburg has resigned his position in the Bureau of Standards, Department Commerce and Labor, in Washington, D.C. He is going to engage in the mercantile business with his father at 590 Massachusetts Avenue, Cambridge, Mass.—D. C. Davis is still in the Patent Office in Washington, where he was recently promoted to the position of third assistant examiner.—Ray Shedd was married during the summer.—Ralph Thayer, who is now at the Institute, plans to go into practical mining very soon.—Arthur Thomas stopped over in Boston an hour or so the first of the month. He appears to be prosperous.—Bill Wright is now at Big Elk Cattle Ranch, Lyon, Col., where he is making a hard fight to regain his lost health. He says he is punching cattle, and finds it a great life in the summer time, although there is not much chance to apply naval architecture except to a "prairie schooner."—Ray Barber is now vice-president of the Globe Ear-Phone Company, with headquarters at 88 Tremont Street, Boston.

1907.

BRYANT NICHOLS, *Sec.-Treas.*, 143 Garland Street, Everett, Mass.
W. W. BIGELOW, *Res. Sec.*, 399 Lexington Street, Waltham, Mass.

I. *On the Part of the Secretaries.*

During the last three months the secretaries have been busy carrying out ideas which, they hope, will help to more closely unite the members of the class. In the early part of December circular letters booming Technology and '07 were sent to all the men whose names are on our mailing list. On this list are the names of all men who graduated in 1907, and all others who in one way or another have shown interest in the class. If any '07 reader did not receive one of these letters, please send your name and address to the secretary. Also, if you know of any '07 man who is interested to keep up his connection with the class, who did not receive one, let the secretary know about him. Bills were sent to all '07 men who had not paid their dues of \$1 for 1909-10. A good number of very tangible replies have already been received concerning this matter, and the secretaries hope that every one will contribute his share to the class treasury. We do not receive as many letters from the men as we should like. The secretaries and the correspondents are writing all the time, but the number of replies is very small. Realize the privilege you have of being a Tech man and a '07 man, and do your part toward keeping in touch with your classmates. Two changes have been made in the list of district correspondents.

Professor C. D. Howe, Dalhousie University, Halifax, N.S., will take care of the foreign correspondence, as Bigelow has his hands full directing the general scheme. S. D. Wells, Mead Pulp and Paper Company, Chillicothe, Ohio, is the man for the Pittsburg District to write to, as M. E. MacGregor is now in Pawtucket, R.I. To close, the message of the secretaries to the class now and always is, "Pull together hard to make '07 the most united and most loyal of all Technology classes."

II. *Letters.*

A. F. Stevenson, who used to be assistant at the Technology Sewerage Experiment Station, writes:—

I am now in New York, working for North & Phelps, consulting sanitary experts, as chemist and bacteriologist. I spent two very pleasant months this fall in Tarrytown, doing water disinfectant work, and I start to-morrow (December 18) for Hartford, Conn., to do a similar stunt there.

His address is care of North & Phelps, 188 Greenwich Street, New York city.—M. E. MacGregor writes:—

I will drop you a line, and let you know that there will soon be another Benedict among the ranks of '07. By Friday night, December 17, the knot will be tied, and Miss Helen A. Emerson, of Reading, Mass., will become Mrs. M. E. MacGregor. . . . Best wishes for all '07.

—Mac's address is 170 High Street, Pawtucket, R.I.—Harry Moody writes a breezy note:—

In Providence I was with the Model Heating Company, and thought I should stay with them, but the Westinghouse Machine Company made me an offer to go with them. . . . I am in the sales department, and am located at their Boston office, 131 State Street. I am in the office part of the time, and the rest of it I am out round, looking after our New England business, principally the turbine, gas engine and producer end of it. . . . Mail will reach me addressed to 5 Walker Street, West Somerville, Mass.

—C. M. Butler accounts for himself thus:—

I have been working as chemist with the Glens Falls Portland Cement Company since leaving Tech. Like the place and work very much.

His address is 52 Bay Street, Glens Falls, N.Y.—A letter from R. F. Knight, 20 Pearl Street, New Britain, Conn.:—

For the first six months after leaving Tech I was testing automobile motors at the laboratory of the Association of Licensed Automobile Manufacturers, but since then have been with the Corbin Motor Vehicle Corporation at New Britain, in charge of the motor assembling department.

The most important thing that has happened to me was my marriage on Oct. 7, 1908, to Miss Alice B. Andrews.

—Phelps N. Swett is a professor in Middlebury College, Vermont. The secretary has a long letter from him, from which the following extracts are taken:—

Since college I have had a varied existence. Ran a 500-acre farm for a year, sold lumber, and erected a large barn. Then Yerxa ('03), my brother and I went to Europe, where we visited England, France, Switzerland, Italy, Austria, Germany, Belgium and Holland. Got in a storm from Holland to England, and the stunts we did in our bunks as the ship tipped would have put Sharp and Tylee in the shade. Then back to Boston, where there was "no work," so returned to Tech with Farrington for an M.S. Then landed a job in the cost department of W. H. McElwain Manufacturing Company. After four months I decided that I should rather play marbles out-of-doors than to be a captain of industry in doors, so I located as the chief of a field party on contract No. 5, Springfield, Mass., water-works, and everything was running great. In a month an offer came from Middlebury College, stating that they wanted me to come and take charge of the new scientific department. . . . We have a Faculty of twenty and some 250 students. . . . Our aim in the scientific department is to fit students for the third year at Tech principally, and to give them a more general education than they would obtain at Tech.

—Sentences from a letter from Phil Kennedy follow:—

. . . The North-west has no place for a fellow who has made up his mind that he must have a certain line of work, or that things must be assured him before he will step ahead. Since coming here, I have been working at civil engineering more than at electrical. For six months I was with the Washington Water Power Company, of Spokane, in a very minor position on construction. When the panic of '07-'08 came, I went out with the crowd. For seven months I made a living at private work, and in July, 1908, entered the employ of the city of Spokane, in the bridge department.

. . . I handle all the electrical and most of the mechanical work passing through the city engineer's office. . . .

—Kennedy's address is 1129 Hamilton Street, Spokane, Wash.—

III. *Informal Class Dinner.*

—On December 18 an informal dinner of the '07 men in Boston and vicinity was held at the Tech Union. Although only sixteen men showed up, we had a jolly and interesting gathering. Those present were Lawrie Allen, Charlie Allen, Luther, Rockwell, Alvord, Fletcher, Don Robbins, Tresnon, Macomber, Dickinson, Norton, Bill Kimball, Wonson, H. R. Draper, Small, and Nichols, the secretary. The guests of the class were Professor Arlo Bates, Mr. I. W. Litchfield, and that good friend of '07, Bursar Rand, Don Robbins was toastmaster. The speeches were of a very in-

formal nature, and were very instructive and entertaining. Professor Bates spoke of the three fundamentals for a successful young engineer. They were: first, the technical training, which is obvious; second, the enthusiasm for work which impels a man to do more than he is paid for in cash; third, the ability to take the initiative. His talk was good sound advice, and was interspersed with delightful wit and humor. Mr. Litchfield spoke of the wonderful growth of the alumni associations during the past year, and the great increase of their power. Mr. Rand talked on the recent report of the Treasurer of the Corporation, and gave many enlightening points on the financial condition of the Institute. The fellows asked questions of both these gentlemen, and in an informal way they were answered, so that every one was benefited. We had a little sing around the piano, with Wonson leading, and then said, "Good-night," with a renewed interest in '07 and renewed devotion to Technology.

IV. *Notes and Announcements.*

The following clippings from Boston newspapers interest '07:—

Among passengers on the outgoing steamship "Bohemia," for Europe, is Miss Ethel Colcord, of Lynn, daughter of Mr. and Mrs. Joseph W. Colcord, who is starting on a voyage to India. She is to be married there to Bieranga Gupta, a native of India, the son of a wealthy merchant of Calcutta. The prospective bridegroom is a graduate of the Massachusetts Institute of Technology. Miss Colcord is to go first to London, where she will remain for a fortnight, meeting there her fiancé's father, who is a member of the Indian Council in London. He will travel to India with his future daughter-in-law, and on arrival the marriage will take place in Jhelum, where young Gupta has charge of a large electrical plant. He and his bride are to live in a house-boat on the Kashmir River.

Edmund H. Squire is made instructor in physics, following a two years apprenticeship as assistant in the heat laboratory under Professor Charles Norton. Young Squire's advance to an instructorship in two years is an unusual accomplishment. He has just announced his engagement to Miss Louise Kingsbury, of Needham.

John J. Thomas, ('07) was commissioned second lieutenant of coast artillery in the United States Army, as a result of the recent examinations for civil appointments. He passed at the head of a list of one hundred and sixty candidates, and goes to Fortress Monroe for instruction in the school for officers.

Charles A. Eaton ('07) passed third on the list in the artillery examinations. He will not enter the service at present, however, as he is serving as ensign in the revenue cutter service, where there is a shortage of commissioned officers to man the cutters.

—In spite of this statement regarding Eaton, he is now at Fortress Monroe, Va., with Thomas.—We extend congratulations to the many '07 men who are getting married. Charlie Allen says, "If it keeps on this way a list of the bachelors in the class will be more interesting and shorter than the otherwise."—Clarence A. Bowen was married Friday, Oct. 15, 1909, to Miss Sarah Alice Gray, of Lowell, Mass.—On Oct. 12, 1909, H. H. McChesney deserted single blessedness.—On Oct. 18, 1909, F. C. Jaccard married Miss Helen J. Filley, of Kansas City.—H. S. Duncan is still with the Old Dominion Copper Mining and Smelting Company. He has a daughter, born May 12, 1909. Address is Box 815, Globe, Ariz.—S. G. Emilio was married a year ago last summer to Miss Grace M. Symonds, of Salem, Mass. He writes: "Miss Grace S. Emilio, my daughter, born July 11, 1909, I am very proud of . . . She's a wonder." Emilio is doing the office part of the engineering work in connection with an irrigation canal. Address, Dee, Ore.—J. W. G. Hanford is with E. Tappan Tannatt, consulting engineer, in Spokane, engaged in hydro-electric and irrigation work.—Tom Gould's engagement is announced. His address is 1206 Boylston Street. Newton Upper Falls, Mass.—Dick Ashenden is the proud possessor of an heir.—We are very happy to announce that "Stud" Leavell's foot is entirely healed, and he has gone back to Cobalt. Address, Buffalo Mine, Cobalt. Ontario, Canada.—Walter B. Gonder's address now is care of Cinclore Central Factory, Cinclore, La. He is booked to sail from San Francisco for Manila, Philippine Islands, on March 8, 1910, where he has a contract to take charge of the government's experimental sugar station for a period of three years.—A. R. Cullimore is first assistant engineer in the construction of the Municipal Courts Building at St. Louis. His address is 4326 West Pine Boulevard, St. Louis, Mo.—"Tuckey" Noyes is in construction work along civil engineering lines at the Boston Navy Yard, Charlestown, Mass.—E. G. Lee became a father on Dec. 13, 1909. Miss Dorothy Guild Lee is her name.—We understand that Eugene Potter was married in the first part of December.—S. J. Egan, Box 864, Bremerton, Wash., is taking exams for draughtsman in the United States Navy Yard there.—With all this good news, it is with feelings of sorrow that we record the death of Carroll F. Story, from typhoid fever, on Oct. 19, 1909. He was a Course XI. man, and, although not so very well known, was beloved by all who were associated with him.

V. *Changes of Address.*

In addition to the changes noted under heading IV. are the following: W. B. Coffin, 40 Oakland Road, Brookline, Mass.—L. A. Dickinson, 30 Partridge Avenue, Somerville, Mass.—H. P. Farrington, care of Viele, Blackwell & Buck, 49 Wall Street, New York, N.Y.—H. A. Frame, Sault Ste. Marie, Ontario, Canada.—R. D. Gale, care of A. D. Little, Inc., 93 Broad Street, Boston, Mass.—Breed Hall, Forest Assistant, Gunnison, Col.—A. H. Jansson, 1331 Fairmount Street, Washington, D.C.—W. T. Johnson, Jr., Dairy Division, Department of Agriculture, Washington, D.C.—R. G. Kann, Superintendent and Secretary, Penn-American Plate Glass Company, Alexandria, Ind.—R. E. Keyes, 15 Williams Street, Brookline, Mass.—W. I. Keeler, 8 Sherman Avenue, East Hartford, Conn.—H. D. Loring, 94 Hudson Street, Somerville, Mass.—R. P. Lowe, 34 Atlantic Avenue, Fitchburg, Mass.—Alexander Macomber, 237 Berkeley Street, Boston, Mass.—W. H. Martin, Vernon, Vt.—F. B. Menner, 49 Wall Street, New York, N.Y.—W. P. Monahan, care of W. L. Churchill, Sanchez, Chihuahua, Mexico.—Allen Pope, 3157 Mt. Pleasant Street, Washington, D.C.—T. L. Smith, 526 Broadway, Paterson, N.J.—E. B. Snow, 827 Second Avenue, Detroit, Mich.—H. A. Stevens, Maple Terrace Inn, Middletown, N.Y.—A. H. Sullwold, 1052 Ashland Avenue, St. Paul, Minn.—A. H. Trull, Milton, Mass.—J. L. Walsh, United States Department of War, Washington, D.C.—R. H. Willcomb, St. Maries, Ida.

1908.

JOHN T. TOBIN, *Sec.*, care Virginian Railway Company, Norfolk, Va.
 RUDOLPH B. WEILER, *Res. Sec.*, 26 Brooks Street, Brighton, Mass.

I. *On the Part of the Resident Secretary.*

In the last number of the REVIEW several pages were devoted to the names of new associate members of the Alumni Association, and among them appeared many '08 men. If there are still any non-graduate '08 men who wish to become associate members, the resident secretary will be glad to forward applications and secure the necessary indorsers, if it is inconvenient for the applicant to do so. Class dues of one dollar for 1910 will be due on February 1. About that time, probably, a circular letter will be sent to all members whose names appear on the list, asking for statistics and general information, and a prompt reply is requested in order that we may have most of the statistics compiled for the April REVIEW.

II. *Matrimonial.*

Arthur E. Bremer was married to Miss Florence M. Cole, of Newton Highlands, on Oct. 16, 1909.—We are in receipt of the following under date of October 24:—

6559 MINERVA AVENUE, CHICAGO, ILL.

Your letter of the 18th has just reached me, and I am very glad to answer it and furnish you the information for which you asked. I came to Chicago early in the summer, and have been so busy that I have had to neglect my college and other friends in Boston. I am at present with the Chicago, Milwaukee, & St. Paul Railway, Bridge and Building Department.

In regard to the "happy event." I returned to Boston on the 1st of September, was married, and left for Chicago on the 5th, Sunday. The young lady's name was Miss Julia M. Brown, the daughter of the late Captain George F. Brown. She resided in Cambridge.

Though unfortunate in 1908, I returned to Tech last fall, after finishing up some work for the American Sugar Refining Company, and was granted my degree last June. My name may therefore be on the rolls of 1909, but I shall always be an '08 man. . . .

This completes about all the news of my movements since '08 split up.

Very truly yours,

HERBERT C. ELTON.

—Ignacio Bonillas was married to Miss Myrtle Willard Morse, of Brookline, on December 18. During the recent summer Bonillas was a member of a geological commission appointed by the National Geological Institute of Mexico, to make a study of the different regions of the State of Oaxaca. Mr. Bonillas, who had charge of the petrographical work, studied the coal and iron deposits and made valuable discoveries of fossiliferous fauna. The most interesting discovery was the existence of opals, which were not known to exist in Oaxaca. Mr. Bonillas is connected with the Mexican Geological Survey.—In addition to the above several other weddings and engagements have been indirectly reported, but have not been confirmed up to the time of going to press.

III. *Letters.*

We are in receipt of the following from "Spike" McGuigan:—

TORONTO, CANADA, Oct. 9, 1909.

Enclosed please find Canadian Express money order for \$3 to cover class dues and alumni assessment. The balance may be applied to the general fund for procuring a crown for the Hon. Bill Adams, heir apparent to the Philippine throne, or Bull Durham, as he may choose.

With kindest regards to yourself and any of the lucky ones who may be around the Big Town.

Since receiving the above, we have been indirectly informed that "Spike" is now in Virginia.—We received the following from the Philippines, Nov. 30, 1909. Brown has the distinction of being the first man to pay his dues for 1910, and also of writing one of the most interesting letters yet received:—

ASMGAN PANG, P.I., Oct. 21, 1909.

I am enclosing a P. M. O. for class dues 1909-10. Have had the order in my pocket for about a month, and it is a sorry-looking sight, for I have just experienced one of those typhoons you read about. Ye gods! I've been just itching to experience a big one, and I got my wish for fair.

There are two of us here on irrigation work, and we have two houses, one here on the plain and one on the river-bank back in the mountains. We were at our mountain camp when it began to rain like Niagara Falls and blow like two hurricanes off Hatteras. We had a cable station there for river gaging, and it was supposed to be located several meters above the highest water ever known. We also had two other houses for workmen. Our house sure was a dandy, and we had overlooked the building of all of it. Really quite luxurious for this country, and especially so for an engineering camp.

But back to the water. At 6.30 P.M. Sunday the river was rising very slowly, and the typhoon was doing its worst. Took roofs off of workmen's houses, and they came in with us. About 8 we went to bed with our clothes on, and, when the house didn't threaten to fall (which was seldom), we got a little sleep.

At 2 A.M., Monday, there was terrible crash, and we both jumped up and took a lookout. Ye gods, my heart beat 120 to the minute right away, for there was that river right up in our back door-yard, shooting logs around to beat four aces. The houses here are built up on posts about eight feet above the ground, and that crash was a log bumping against one of our house posts.

Nothing for us to do but evacuate and do that mighty quick, for that river had risen just thirty-two feet between 6.30 and 2 A.M. Thirty-two feet in seven and one-half hours is going some.

Luckily, eight of the men had stayed there over Sunday, and we soon got the instruments and most of the goods out before we had to quit the house. Went back on the mountain, and camped in the wind and rain. We were a sorry-looking bunch, and, if it hadn't been for a box of cigars and a bottle of Black & White that we saved, we would all have been in the hospital by now.

This isn't a sample of the average life of an engineer in Philippine Islands, though. As a whole, the life is exceedingly pleasant, as there is no manual work to do. The natives carry your instruments and even your note-book for twenty-five cents (gold) a day. When we get back to camp (usually

the best and biggest house in town), there are boys to take off your shoes and fix the shower-bath and bring your pajamas, etc. Then a cook and a boy or two to wait on table makes one think you are in a first-class hotel. And we have the best show that money can buy, and it is mighty fine living all around. We mix work with cards, and occasionally a native baile (dance), and the native señoritas dance the way we do, and exceptionally well, too.

The heat? Oh, yes, it is hot here, but not excessively so. Never gets as bad as a hot day in New England. There is a small range of temperature and always cool nights.

If a fellow wants to come over here, I advise him to take the P. I. civil engineer's exam. within the next six months, for many contracts expire in July, August and September, 1910, and there will be a call for new men.

The trip alone is worth the time spent here, and there is a big opening for any capable fellow who can stick here for ten years. He can get together a comfortable pot for old age, but it means isolation from civilization for that length of time. "Wild Bill" Adams, Caton and A. C. Nichols are all alive and kicking. Regards to the fellows.

Yours in '08,

C. O. BROWN.

IV.

S. C. Lyon is with the Factory Mutual Fire Insurance Company, Boston.—Joe Wattles is with the Edison Electric Illuminating Company, steam heating and ventilating department, Boston, 1 ss.—Charlie Edmonds is back at the 'Stute as assistant in the Turbine Option, Course II., having taken Sutton's place.—Sutton is now fourth assistant examiner in the Patent Office, Washington, D.C., where he has been since July 1. His address is 1331 Fairmont Street, Washington, D.C.—A. R. Hunter has left the Garrison Street shops, and is now with the Noiseless Typewriter Company, Middletown, Conn. His address is 210 South Main Street, Middletown, Conn.—Kennison has left the Factory Mutual, and is now instructor in mechanical drawing and mathematics at Colby College, Waterville, Me.—H. S. Eames has left the Physical Laboratory, and is now instructor in mechanical engineering at the Rhode Island State College, Kingston, R.I.—J. A. Fottler is also there as assistant professor of electrical engineering.—C. H. Spiehler is with the Rochester Railway and Light Company, Rochester, N.Y.—R. W. Riefkohl is with French & Hubbard, consulting engineers, Boston, in the concrete department.—C. W. Clark is superintendent of the Taylor & Barker chemical plant, Lowell, Mass.—W. B. Morse is with Marcus Mason & Co., manufacturers of plantation machinery, Worcester, Mass. His address is 14 Berkshire Street, Worcester, Mass.—

A. B. Babcock is with the American Sugar Refining Company, Brooklyn, N.Y. His address is 112 Lafayette Avenue, Brooklyn, N.Y.—R. G. W. Wint is with the Firth-Sterling Steel Company, Washington, D.C., as metallographist.—M. E. Denny, Cardross, Dunbartonshire, Scotland, has furnished us with the address of J. K. De Loach as care De Loach Mill Manufacturing Company, Bridgeport, Ala.—H. H. Bentley, 424 Massachusetts Avenue, Boston, Mass.—S. F. Hatch, 215 White Street, Waverley, Mass.—G. T. Glover, Westinghouse Electric Manufacturing Company, New England Building, Cleveland, Ohio.—G. W. Bailey, care S. M. Green, 318 Main Street, Springfield, Mass.—R. W. Davis, 913 East Kemp Avenue, Watertown, S.D.—G. A. Murfey, 155 Millard Avenue, Pasadena, Cal.—Donald H. Maxwell, 1360 Kenilworth Avenue, Rogers Park, Chicago, Ill.—C. L. Hussey, 1547 Smith Street, North Station, Providence, R.I.—F. K. Belcher, Walnut Street, Richmond Hill, Long Island, N.Y.—D. W. Clark, Sullivan Machinery Company, Claremont, N.H.—We have received the following notes from the secretary, who is with the Virginian Railway Company, Norfolk, Va.:—

After a month's sojourn in Princeton, W. Va., on the new railroad shops there, I've made another jump and am back in Norfolk again. Here I have become a sailor, as we are taking soundings for improving the ship channels and installing a merchandise pier. I haven't any idea how long I will be in Norfolk. I expect to live down in the old Jamestown Exposition grounds.

I have received letters from some of the fellows. I think that I wrote you before that Hardy Cross ('08), Course I., is teaching mathematics at the Norfolk Academy. Hennen, Course I. ('08), has opened an engineering office in Morgantown, W. Va., and says he is getting on finely.

George Glover broke his long silence by declaring to me the other day that he now was an expert. He writes: "A word concerning my present life. Still a temperance man and a hard worker. As an engineer, a wonder. As a salesman, I can jolly like an old knight of the grip. The Lord knows I love the REVIEW, and would that I could add something which would appeal to its readers; but away back in the days of 1904 I was collectively and individually informed that as a writer, for uninterestingness, the English Department, including — and —, said I was the limit." George's address is Westinghouse Electric and Manufacturing Company, New England Building, Cleveland, Ohio.

Al Place writes from Seattle, Wash., care Seattle Electric Company, that he finds the country out there much to his liking. He is taking some fliers in real estate.

"Hobe" Ferris writes from Columbus, Ohio: "I came out to this town last October, and haven't been fired Yet (note the capital 'Y'). I not only have qualified for the married men's club, but have recently been elected

to T. R.'s Anti-race Suicide Club. The youngster, of course, is going to Tech. Hurrah for Tech 1931."

"Hobe's" address is care State Board of Health, Engineering Department, Harrison Building, Columbus, Ohio.

Here's to old Bill Barton! Long may he live and prosper. He's gone and got married, too. Bill always was a good "scout." . . .

D. Bowman writes from Chicago, Ill., that he is in the engineering department of the Commonwealth Edison Company, 139 Adams Street. He lives at 437 East 61st.

J. C. Gaylord is with the Los Angeles Edison Company at Los Angeles, Cal.

C. O. Brown writes from the Philippines: "Wild Bill" Adams seems well pleased with the place out here, and plans to have the adorable Mrs. A. here soon. Nichols and Caton want to be remembered." Brown likes it first-rate. He has a hat which measures thirty-eight inches in diameter. Going some.

Philip C. Brown, care I. B. Williams Company, Dover, N.H.

"Blackie" writes from Lynn, Mass., that there are quite a number of fellows with him there; namely, R. E. Manning (VI.), McPhee and Grimes and Harry Lord. Address, Henry W. Blackburn, Belcastle Chambers, Lynn, Mass.

As you know, personally I am a regular bird of passage, and, although I am here at the seashore to-day, I may be "railroaded" to the mountains to-morrow. However, I think that railroading is the only thing.

We have received the following from "Jack" Callaway, who is with the New York Edison Company:—

55 DUANE STREET, NEW YORK., DEC. 15, 1909.

Will you kindly announce, in your next class letter to the REVIEW, my engagement to Miss Nadine Eustis, of New York city? As far as I can judge, you must be pretty well flooded with notices of this character. 1908 is a live bunch, no doubt. The only class news I know of is the wedding of Bob Angus (II.) to Miss Inez Fox at Hartford last month, and Sam Gardner's marriage to Miss Emily Edmund at Wakefield in October. Bob is assistant superintendent with Westinghouse, Church, Kerr & Co., on the Pennsylvania Terminal in town, while Gardner is assistant superintendent of a chemical plant, Roessler & Hasslacher Company, at Perth Amboy, N.J.

I forgot Ted Scott (ex-'08, Course I.), who was married December 4, at Lowell, to Miss Edith Carter, of Lowell. "Lovey" Lovejoy ('05, IX.) was best man, while I had the same job at Sam's affair.

I am still holding down my desk in the mechanical engineer's office here as assistant to the chief, who, by the way, is a Tech man, George A. Orrok (ex-'89, V.). I like the work, and the engineering crowd here is a very congenial one. The boss and myself are the only Tech men in the company at present, but there are a lot of other college men, Stevens, Cornell, Columbia, Syracuse, McGill, Mississippi, being among those represented.

—A large part of the above notes were received too late for proper classification. After reading them, it will be seen that matrimonial business is in a far more flourishing condition than might be supposed from the notes appearing under that particular heading.—W. E. Barton was married on Tuesday, November 9, to Miss Gladys Loring, of Somerville.—Last, but not least, the Class of '08 is increased by one,—Mr. and Mrs. Lafayette Boyd Hedge announce the birth of a son, Lafayette Boyd Hedge, Jr., on Dec. 15, 1909, at Citronelle, Ala.

1909.

CARL W. GRAM, *Sec.*, Mass. Inst. of Tech., Boston, Mass.

It was our expectation that some fellows would find themselves incorrectly labelled in the last issue, and thus write to correct the mistake, at the same time giving us some news, but no such luck.—Fred Green (VI.) is thus far the only one heard from. He says:—

Please contradict rumor that Mills and I are at the University of Colorado. We are at Colorado College, Colorado Springs, Col. Mills teaches physics and electrical engineering, and I confine myself to the latter. Am having the time of my young life.

Course I.—H. H. Howland is evidently still doing cross-country work, but now it is on the railroad. He writes in part that he is with the Missouri Pacific Railway Company, and with one of the engineers engaged in special work on the Southern Kansas Division from Coffeyville, Kan., to Kansas City, Mo. We average from five to ten miles a week, so our address is constantly changing, but my home address, Westdale, Mass., will always reach me. We are not assigned to any particular division, but come from the chief engineer's office in St. Louis, so are liable to be sent anywhere over the seven thousand miles of the road. I was first sent out to Colorado in the foot-hills of the Rockies, but some two or three weeks ago was trotted down here. I expect C. H. Crawford ('09) is also with the same road at Little Rock, Ark., or thereabouts, and I intend to look him up, if possible, and have a private reunion.

—L. J. Towne was married on November 20 to Miss Helen Jones, of Evanston, Ill. He is living in Hinsdale, Ill., and is in construction work for the Chicago, Milwaukee & St. Paul Railroad.—John Schaaf has also undertaken the bonds of matrimony. His marriage to Miss Gertrude Cook, of Seattle, Wash., took place on December 2, and they are now living at the Lafayette Hotel, Buffalo, N.Y. Schaaf is in the contracting business.—Rumors are out that K. J. Campbell is engaged.

Course II.—"Reg" Millard—lost, strayed or pinched. Information as to his whereabouts will receive honorable mention.—So far as we can ascertain, H. C. Cloudman was the first graduate of our class to take unto himself a wife. "Cloudy" was married to Miss Myra Frances French on Monday, September 20, in Portland, Me. He is now with the Hermance Machine Company, Williamsport, Pa., who make a line of wood-working machinery.—Dan Belcher is with Baxter D. Whitney & Son, Winchendon, Mass.—Riefkohl is in construction work with the firm of Herbert & French, Boston, and is now putting up some mills in the vicinity of Boston.—Weill is in the city engineer's office in San Francisco, Cal.

Course III.—Joslin writes from Haileybury, Ontario, under date of November 27:—

Mine has been the usual varied experience of the budding mining engineer. Prospecting, mine superintendent, and consulting engineer on some bum mines tell the story. A few weeks ago I joined the rush northward to the new Porcupine Lake gold fields, and managed to stake a few claims and make out a report on the district. I have not sold my claims yet, so I am not quite prepared to advance the Institute enough money for a new home. Had a devil of a trip. We went by canoe, and it wasn't the Charles River kind of canoeing. Coming out, we had to paddle ten hours on a stretch to keep ahead of the ice which was forming on the edges of the river. We were not particular about being frozen in over night. At present I am working for "Pop" Loring's father. Ernest Loring is with me most of the time, so we manage to keep from getting too homesick for Charlie's and all the old places about Boston. I am hoping to make enough money between now and Christmas time to take a little run back to Boston. Burt is in Cobalt, working at the University Mine, assaying, I believe. Reilly is also in Cobalt as an engineer-at-large. I get copies of *The Tech* now and then, which show me that the old Institute is still moving along. Gee! I'd like to be in it all again. We didn't appreciate what it meant last year, I am afraid. It's getting bully cold up here, and we have had a foot of snow so far. It's great fun wading through it and trying to examine claims and prospective mines, and that is our work at present. Of course, they aren't good mines, or we wouldn't get the job. However, we are getting "experience," which is what we are supposed to desire and which, God knows, we need. If any one wants a small mining engineer at a big price, the address below is the proper one. Address is 76 Home Life Building, Toronto, Ontario, care Frank C. Loring.

Courses V. and X.—Bill Kelly writes that he is really going to work for a doctor's degree, and has decided to take three years because of the broader training. He is coming home next summer, and then sail for Germany about October 5, to be gone for two years and a half. He expects to work his "*Arbeit*" on rubber, with especial reference to its colloidal state in solution, etc. After com-

pleting his course, "Bill" expects to visit the rubber-producing country in India and Ceylon, then continue his way around the world, coming home by way of Hawaii and 'Frisco. He states that the German methods of teaching can't hold a candle to the American methods:—

They deliver a lecture, make a bow and beat it. There is one exception, and that is Dr. Böttger, who has a little informal discussion after each of his lectures on the Phase Rule. The only reason that he does this is because of the fact that he learned something of the American methods during his stay at the 'Stute about four years ago. He knows all the profs. there. He told one fellow that the comparison of American and German methods was *ausgeschlossen* because of the superiority of the former.

—"Link" Soule dropped around to the 'Stute a couple of days after Thanksgiving to see the Course X. bunch. He started to come home for Thanksgiving Day, but couldn't get by Springfield, and as a result we are able to announce his engagement to Miss Margaret Newell, of Springfield, Mass. Link is in the testing department of the Diamond Rubber Company, Akron, Ohio.—Byron also has been up to Boston. He is contemplating a return to the Institute, but is at present with W. D. Byron & Sons, Williamsport, Md., in the tanning business.—"Chet" Pope announced his engagement to Miss Ruth Tucker, of Winthrop, Mass., on November 15, beating out "Link" Soule by ten days. "Chet" is on the chemical staff of the Forbes Lithograph Company.—J. N. Stephenson writes:—

As I am in charge of the drawing department, it is up to me to make out the term exam. in geometrical drawing. For instance, How many dimensions has a point? It is good to get one on Charlie Adams.

—Robbie says he hasn't been seasick yet, but adds that, "while there's ocean, there's hope." When the REVIEW comes out in January, "Robbie" will probably be in Japan.—Shippee is in Phenix, R.I., and expects to come back to the 'Stute in February. Pettingell is right here on the job, taking a majority of work outside the course.—"Spec" Paine and Carl Gram are up in 40 Walker, learning the rudiments of organic and inorganic, while Forrest digs around to make sure that they "do not put oil in the sink."

Course VI.—Finnie writes from Kenosha, Wis.:—

I am now a devoted student of illuminating engineering, which is a profession which necessitates more or less travelling and consequently has proved quite agreeable. After I had been in Cleveland awhile, the chief engineer decided that I ought to see how the incandescent lamps are made. That necessitated trips to several factories in Ohio. There is one near Providence, R.I., and I expressed my willingness to go there. They told me to go, and you bet I beat it quick. Clinton (Jim Finnie's

home) is not exactly on the direct route to Providence, but, nevertheless, I managed to work it for a Sunday stop-over. After staying in Central Falls, R.I., for a week, I jumped back to Cleveland. Just at present I am in a young city in Wisconsin, and expect to be here about a week longer. It is a place of about thirty thousand people, and by actual count there are ninety-six saloons. In one block there are twelve. . . .

One of the sales companies sold a big order of lamps to the electric company here, and then the sales company sent me here to instruct the electric company how to put up the lamps. I have to figure a whole lot of dope as regards intensity, plane of illumination, character of reflectors, and so on. Then I have my draughtsman make a plan of the house or store, and I locate the lights and tell them what size to use, etc. That is what the Illumination Section of the Engineering Department is for. The other part of the section looks after street lighting,—three on inside and three on outside lighting. I don't object to the travelling game, for it gives me a good chance to see the country at the company's expense.

—Haylett O'Neill is assistant construction engineer for the Interborough, N.Y.—U. P. Merrill is at Fort Collins, Col.—Winterstein has had to leave town for his health, but will probably remain in the employ of Stone & Webster.—S. F. Barnett's (I.) address is 111 29th Street, Seattle, Wash.—F. J. Lange (VI.) is taking care of the technical and electrical end of the Dickinson Manufacturing Company of Springfield, Mass., under the distinguished title of electrical engineer and assistant manager.—“Jack” Pritchard (X.) is located in Ford City, Pa., with the Pittsburgh Plate Glass Company, occupying the position of head chemist for that firm.—W. F. Jones writes from Mexico. He says:—

Velardina, where Lord is, isn't far from here. It is a Tech camp. I heard they gave a Tech dance up there last week. I expect to be pretty well tied down here, but may connect with the crowd at Velardina sooner or later. My address is care Compania Minera de Penoles, Mapami, Durango, Mexico.

—A great many men who were with us at the Institute for only one, two, or three years are very strong in their desire to keep in touch with the '09 crowd. The secretary has received letters from a great many, and a large percentage have joined the Alumni Association.—H. H. Bennett is in a wool scouring mill, 55 Jackson Street, Lawrence.—B. Edwin Hutchinson, who in conjunction with Harry Hoole used to make us sit up and take notice of *The Tech* editorials, is superintendent of an open hearth furnace in Chicago.—George Weinhausen is with A. George Schultz Company, manufacturers of paper boxes, etc.—Ira Wolfner is with the National Cooperage and Woodenware Company, Peoria, Ill.—A. H. Strauss is city bacteriologist in the health department at Richmond, Va.